BK	NUM	ANS	QUESTION	ANSWER A	ANSWER B	ANSWER C	ANSWER D	ILLUST
11	1	B	The shaft coupling for the pump illustrated is prevented from rotating on the shaft by a _____.	lacing wire	key	set screw	lock washer	GS-0143
11	2	D	Tubing is sized by _____.	allowed working pressure	cross-section area	nominal inside diameter	nominal outside diameter	
11	3	B	Which line on the graph shown in the illustration indicates latent heat of fusion?	Line 1	Line 2	Line 3	Line 4	SG-0001
11	4	B	Short cycling of a refrigeration compressor refers to _____.	frequently grounding out	frequently starting and stopping	running too fast	running too slow	
11	5	D	The emergency bilge suction valve is typically used _____.	to inject cleaning additives when the bilges are extremely dirty	when the main condenser becomes fouled, in order to provide additional cooling water circulation	to connect the rose box to the independent bilge suction	if the bilges become flooded and they can not be emptied by any other means	
11	6	B	The by-products of oxidation, as a result of water contamination of hydraulic oil, are generally _____.	removed by cellulose type filters	gums, varnishes, and acids	always neutralized by oil additives	harmless and have no effect on system components	
11	7	D	A record of the types and strengths of steels used on a MODU must be included in the _____.	general plans	builder's documentation	Certificate of Inspection	construction portfolio	
11	8	B	Which of the fittings listed should be used for the installation of piping to permit removal of the pump for servicing?	Coupling	Union	Quick disconnect	Nipple	
11	9	A	A continuous watertight bulkhead on a MODU may also be a/an _____.	structural bulkhead	exterior bulkhead	centerline bulkhead	joiner bulkhead	
11	10	B	Which of the following describes the purpose of a striker or doubler plate?	Provides a surface for the application of force, or the installation of machinery.	Provides landing surface for the sounding bob of a tank sounding tape.	Absorbs machinery vibration.	Prevents valve stem over travel.	

11	11	D	A high reading at a salinity cell located in the loop seal between two stages of a flash type evaporator would indicate _____.	chill shocking is necessary to remove scale	leakage at the second-stage condenser	faulty operation of the brine overboard pump	carryover in the first-stage	
11	12	C	Regarding MODU construction, bulkheads in the quarters are generally _____.	structural	watertight	non-structural	continuous	
11	13	D	In machine shop practice, a center gage is used for checking the angle of _____.	drill points	screw threads	screw thread pitch	60° thread cutting tools	
11	14	A	On all vessels equipped with refrigeration units of over 20 cubic foot capacity, _____.	a gas mask suitable for protection against each refrigerant used, or a self contained breathing apparatus must be provided	it is the sole responsibility of the chief engineer to ascertain that all members of the engineering department are familiar with the use of gas masks or breathing apparatus	spare charges shall be carried for at least 50% of each size and variety of gas masks and/or self contained breathing apparatus	all of the above	
11	15	C	A portion of the cargo of an LNG carrier boils off during each voyage. How is the cargo boil off normally handled?	Compressed, condensed, and return to the cargo tanks.	Vented to the atmosphere.	Burned in the boilers.	Mixed with nitrogen and recirculated through the primary barrier.	
11	16	D	Air leaking into a flash type distilling plant could occur through _____.	gasketed joints	valve stems	gage glass packing	all of the above	
11	17	B	The construction portfolio may be included as part of the MODU _____.	general plans	operating manual	builders documentation	Coast Guard file	
11	18	C	Which of the following statements represents the proper relative direction of flow through a globe valve?	Direction of flow through the valve is unimportant.	Direction of flow through the valve depends upon the type of seat design used in the valve.	Direction of flow should be from below the seat.	Direction of flow should be from above the seat.	

11	19	B	Vertical partitions providing strength and compartmentation on a MODU are called _____.	decks	bulkheads	joiner work	walls	
11	20	A	The shaded portion of the diagram shown in the illustration represents a _____.	discharge manifold	suction line	bilge system	vacuum branch line	GS-0125
11	21	B	The illustrated drawing shows a correct front "F" and top "T" view of an object. Of the views labeled "1","2","3", and "4", the one that correctly represents the right side view for a third angle projection is _____.	1	2	3	4	GS-0132
11	22	D	Which of the listed types steam traps operates on the principle that hot water flashes to steam when its vapor pressure is rapidly reduced?	Ball float	Thermostatic	Bimetallic	Impulse	
11	23	B	The lathe tool shown as "Q" in the illustration is a _____.	cutting-off tool	left hand side facing tool	right hand turning tool	universal turning tool	GS-0090
11	24	C	The heat gained per pound of refrigerant in the evaporator is known as the _____.	latent heat of vaporization	sensible heat	refrigerating effect	specific heat of vaporization	
11	25	C	A squealing sound occurring from within an operating reciprocating air compressor is an indication of _____.	compressor overload	motor overload	tight compressor bearings	badly leaking unloaders	
11	26	B	A mooring winch should be equipped with mechanical brakes capable of holding _____.	half the breaking strength of the mooring line	the full breaking strength of the mooring line	the maximum expected tension of the mooring line	50% over the working tension of the mooring line	
11	27	C	The requirements for special welding procedures to be used on a MODU must be contained in the _____.	vessel plans	Coast Guard file	construction portfolio	Certificate of Inspection	
11	28	A	The trap illustrated operates as a _____.	thermostatic bellows type steam trap	thermodynamic impulse type steam trap	thermostatic bi-metalic bellows type steam trap	thermodynamic float type steam trap type steam trap	GS-0005
11	29	C	Bulkheads forming part of the tanks on a MODU are stiffened to withstand _____.	deck loads from above	dynamic forces while afloat	hydrostatic pressure	overpressurization	

11	30	D	The operation of a thermostatic steam trap depends upon the _____.	action of a float within a chamber	difference in movement of two dissimilar bimetallic strips not fastened together	fact that hot water under pressure tends to flash into steam when its vapor pressure is rapidly reduced	change in the amount of vapor produced within an enclosed chamber	
11	31	D	Of the views labeled "1", "2", "3", and "4", select the one that correctly represents the right side view of the unnumbered object in the illustration.	1	2	3	4	GS-0003
11	32	A	The operation of a thermostatic steam trap depends upon the _____.	thermal expansion of a fluid	position of a float	tendency of hot water to flash into steam	flow characteristics of a liquid as it passes through an orifice	
11	34	B	The process of removing moisture from air is known as _____.	humidification	dehumidification	vaporization	evaporation	
11	35	D	The relative position of the journal and bearing at operating speed is illustrated by figure _____.	A	B	C	D	GS-0121
11	37	C	The reading on the micrometer scale shown in figure "B" in the illustration is _____.	0.565 inch	0.655 inch	0.680 inch	0.750 inch	GS-0081
11	38	D	Which of the following describes the function of the air receiver in the compressed air system on a MODU?	Condenses moisture.	Provides overpressure protection.	Purifies the air.	Acts as an accumulator.	
11	39	D	Fluctuations in the pressure and temperature of the steam supplied to the first-effect of a low pressure submerged tube distilling plant will cause _____.	increased heat levels throughout the entire unit	decreased priming and lower salinity distillate	first effect scale formation to be loosened	pressure and temperature fluctuations in the entire unit	

11	40	B	A centrifugal bilge pump requires priming _____.	primarily to lubricate the shaft seals	due to the inability of this type of pump to lift water to cover the suction (eye) of the impeller	to initially unload the pump by having its head pressure equal to discharge pressure	in order to overcome the potential energy of water in the discharge line	
11	41	A	A suitable location for the installation of an impulse type steam trap would be in the _____.	horizontal run of drain line from the lowest point at the outlet of the heat exchanger	steam supply line to a feedwater heater	drain line from a high point in the main steam line expansion loop	vacuum drag line from the atmospheric drain tank to the main condenser	
11	42	A	Which of the listed conditions can lead to cavitations in a centrifugal pump?	Vapor pockets formed in the suction flow stream.	Rough casing volute surfaces.	Worn wearing rings.	Partial restriction in the discharge valve.	
11	44	D	Coast Guard Regulations (46 CFR) require refrigerated spaces that can be locked from the outside and cannot be opened from the inside to have an audible alarm to sound in _____.	the chief steward's berthing quarters	the galley	the wheelhouse	a manned location	
11	45	A	The method of framing shown in the illustration utilizes the type of construction termed _____.	transverse	web	Isherwood	longitudinal	GS-0086
11	46	A	The hydraulic oil most likely to thin out when hot and thick when cold would have a viscosity index of _____.	20	40	60	80	
11	47	C	The decks of a MODU are supported by transverse members called _____.	trusses	deck longitudinals	deck beams	web frames	
11	48	B	Why is electrical power preferred over mechanical power for driving heavy machinery on drilling rigs?	More fuel efficient.	More flexible.	Lighter.	Less maintenance.	
11	49	C	On a MODU, the keel is the primary strength member of the lower hull form and is laid in which direction?	Transverse	Diagonal	Longitudinal	Vertical	

11	50	B	How is water traveling along the shaft of a centrifugal pump prevented from entering the shaft bearing?	Shaft seal	Water flinger	Drain hole	Lantern ring	
11	51	A	Which drawing view or projection is shown in the illustration?	cross-sectional	orthographic	isometric	oblique	GS-0001
11	52	C	Which of the following descriptions best identifies the operating principal of a flash-type evaporator?	Sea water is heated to boiling temperature while under a vacuum.	Sea water is passed over heated plates in a thin film.	Heated sea water is injected into a vacuum chamber.	Sea water is forced through a heated eductor.	
11	54	C	If air at 95°F dry bulb temperature and 50% relative humidity is conditioned to 75°F dry bulb temperature and 50% relative humidity, it is an example of _____.	cooling only	cooling and humidifying	cooling and dehumidifying	adiabatic cooling	
11	56	D	The volatility of any oil may be indicated by _____.	the flash point	the fire point	the autogenous ignition point	All of the above.	
11	57	A	A simplified construction plan may be included in the MODU construction portfolio provided it adequately defines the _____.	areas where special materials are used	hazardous areas	location of emergency repair equipment	type and strength of materials used	
11	58	C	What is a function of the wearing rings used in most centrifugal pumps?	Absorb erosion of high velocity discharge stream.	Seal pump shaft against entry of air.	Isolate the discharge side from the suction side.	Dampen the turbulent discharge flow.	
11	59	A	Between the side frames of a MODU, support for the deck beams is provided by _____.	stanchions	brackets	web frames	deck stringers	
11	60	B	A pneumercator tank gage utilizes _____.	a Bourdon tube indicator	a balance chamber	an electronic sensing line	all of the above	
11	61	D	A tank of a MODU, with a volume of 2,000 cubic feet, is pressed up with sea water weighing 64 pounds per cubic foot. What is the weight, in kips, of the liquid?	54 kips	67 kips	78 kips	128 kips	
11	62	C	For MODU's operating under the U.S. flag, the construction portfolio must contain _____.	detailed construction plans	chemical and physical properties of ABS approved steels	approved welding procedures and welding test procedures	loading conditions and limitations	

11	63	C	The lathe tool shown as figure "B" in the illustration is called a _____.	right hand roughing tool	cutting-off tool	round nose turning tool	left hand facing tool	GS-0009
11	64	A	When liquid reaches the compressor of a refrigeration system through the suction line, the condition is called _____.	flooding back	superheating	overflowing	recycling	
11	65	D	In the illustration, item "5" represents a _____.	diaphragm pump	rotating vane pump	positive displacement pump	centrifugal pump	GS-0125
11	66	B	The term 'pour point' is defined as the lowest temperature at which lubricating oils will flow _____.	rapidly	by gravity	through a standard orifice at a specified temperature	at a rate of 60cc per second	
11	67	A	In the MODU construction portfolio, materials which do not conform to ASTM or ABS specifications must also include the _____.	chemical and physical properties of the material	name of the alternative standard or specification	the ASTM or ABS specification the material approximates	manufacturer or origin of the material	
11	68	C	The part labeled "A" of the illustrated bearing is called the _____.	thrust ring	outer race	inner race	cage	MO-0001
11	69	C	Deck beams on a MODU are generally spaced at equal intervals and run _____.	longitudinally	vertically	transversely	intermittently	
11	70	B	Which of the listed methods used for testing a metal, measures the ability of a metal to absorb the energy of a load rapidly applied to the member?	Brinell only	Charpy only	Charpy and Brinell	Rockwell and Brinell	
11	71	D	An acetylene pressure regulator should never be adjusted to maintain pressures exceeding 15 psig (103.4 kPa) because _____.	the relief valve will lift	the fusible plug will blowout	rapid depletion of acetylene is hazardous	this gas become extremely unstable under this condition	
11	72	A	The suction nozzle classification of the pump shown in the illustration can best be described as _____.	end suction	side suction	bottom suction	top suction	GS-0012
11	73	D	Which lathe tool shown in the illustration would best be used on a work piece to perform a right hand facing operation?	P	V	Q	R	GS-0090

11	74	C	The pressure range between the system cut in and cut-out pressures in a refrigeration unit is known as _____.	opposing operational drag	pressure distribution	differential	system purge	
11	75	B	In the diagram illustrated, the direction of flow through the check valve is _____.	from right to left	from left to right	in either direction	dependent on discharge pressure	GS-0125
11	76	C	Prior to the burning or welding of a fuel tank on a MODU, regulations require that an inspection be made. An entry in the unofficial logbook is required if this inspection is made by _____.	a marine chemist	the Officer in Charge, Marine Inspection	the Master or person in charge of the MODU	the National Fire Protection Association	
11	77	C	A welding procedure used for joining dissimilar metals used in the construction of a MODU would be recorded in the _____.	welding plan	ASTM specifications	construction portfolio	Coast Guard file	
11	78	A	The record of tests and inspection of fire fighting equipment on board a MODU must include _____.	the name of the person conducting the test	the weight of the charge	recommendations for the next test	all of the above	
11	79	D	The deck plating on a MODU is supported primarily by deck longitudinals and deck _____.	girders	stanchions	frames	beams	
11	80	C	The reading on the micrometer scale shown in figure "A" in the illustration is _____.	0.9180 inch	0.9500 inch	0.9680 inch	0.9910 inch	GS-0081
11	81	C	How long must the records of tests and inspections of fire fighting equipment for a MODU be retained on board?	Six months	One year	Three years	Until the next inspection for certification	
11	82	A	The reading on the vernier caliper scale shown in figure "E" in the illustration is _____.	3.360 inches	3.610 inches	3.925 inches	4.360 inches	GS-0082
11	83	C	A reciprocating air compressor is running roughly and vibrating excessively, indicating that the _____.	compressor is overloaded	motor is overloaded	foundation bolts are loose	belts are too tight	
11	84	D	Increasing the moisture content of conditioned air is known as _____.	moisturizing	dehumidification	dampening	humidification	

11	85	A	The master or person in charge of a MODU is required to log _____.	the date and hour of each fire drill	the names of all persons on board	only casualties which occur while underway	every event occurring on board	
11	86	C	In a radial piston pump, reversal and control of fluid flow are accomplished by moving the _____.	central valve	radial plunger	floating ring	cylinder body	
11	87	A	What must be entered in the unofficial logbook by the master or person in charge of a mobile offshore drilling unit after conducting a fire drill?	The condition of all fire fighting equipment, watertight door mechanisms, and valves used during each drill.	The location of the unit at the time each drill is conducted.	The name of each crew member who participated in the drill and their responsibilities.	All of the above.	
11	88	B	After conducting a boat drill, the master or person in charge of MODU shall log _____.	the names of crew members who participated in the drill	the length of time that each motor propelled lifeboat was operated in the drill	the length of time the lifeboat was in the water	the time it took to lower the boat	
11	89	A	The deck loads on a MODU are distributed through the deck beams to the _____.	frames	hull	stringers	plates	
11	90	B	One cause of leaky valves in a low pressure air compressor may be attributed to _____.	running with an air filter element different from that required by the original manufacturer's specifications	excessive operating hours without carrying out preventive maintenance	the compressor running too fast	excessive discharge pressure	
11	91	C	To maintain design discharge pressure from a centrifugal pump, the design clearance must be maintained between the _____.	shaft and impeller	motor and pump shaft	casing and impeller wearing rings	lantern ring and impeller	
11	92	B	In the illustration shown, what is the distance indicated by dimensions "I"?	1 1/2 inches	1 3/4 inches	1 7/8 inches	2 inches	GS-0001

11	93	B	Which of the following statements represents the difference between a four-jaw independent chuck and a three-jaw universal chuck?	The jaws on the three-jaw chuck can be individually adjusted.	The jaws on the four-jaw chuck can be individually adjusted.	The three-jaw chuck will hold square, round, and irregular shapes in either a concentric or an eccentric position.	Since the three-jaw universal chuck is automatically self-centering, it is always more accurate than the four-jaw independent chuck.	
11	94	D	Enlarging one tube end so the end of another tube of the same size will fit inside is termed _____.	belling	stretching	flaring	swaging	
11	95	A	Stern tube and strut bearings lined with hardwood or rubber composition materials are lubricated with _____.	saltwater	graphite	light lubricating oil	heavy lubricating oil	
11	96	A	The purpose of annealing any metal is to make the metal _____.	softer	smoother	harder	tougher	
11	97	B	When the longitudinal strength members of a MODU are continuous and closely spaced, the vessel is _____.	transversely framed	longitudinally framed	intermittently framed	web framed	
11	98	C	Lifeboat winches on a MODU are required to be inspected and an entry made in the logbook. What should this entry include?	The time required to lower a lifeboat.	The time required to raise a lifeboat.	The date of inspection and condition of the winch.	All of the above.	
11	99	A	A fluctuating and unsteady vacuum in an evaporator may be caused by _____.	wet steam entering the air ejector nozzle	pinhole leaks in the evaporator tube nests	rapid scaling on the evaporator tube nests	high water levels in the last effect	
11	101	D	If a radial piston hydraulic pump fails to deliver rated fluid volume, the cause can be _____.	contaminated fluid	pitted thrust rings	worn pintle bearings	obstructed suctions passage	
11	102	B	Pipe threads are cut with a taper to _____.	prevent overtightening the joint	provide a leakproof fit	permit easy joint disassembly	produce a fine even thread	

11	103	C	When the tilting box of a variable stroke axial-piston pump is perpendicular to the pump shaft, which of the following conditions will exist?	The pistons reciprocate.	The "B" end cylinder barrel rotates.	There is no fluid flow.	Power is transmitted hydraulically.	
11	104	C	Which of the refrigerants listed is considered ideal for most marine applications?	Carbon dioxide	Ammonia	R-22	Sulfur dioxide	
11	105	A	The dual pressure-temperature regulator, shown in the illustration, is adjusted by turning the stem "L" clockwise (as viewed from the top) and the adjusting ring "B" counterclockwise (as viewed from the top). This will result in _____.	a higher outlet pressure, with a higher controlled fluid outlet temperature	a lower outlet pressure, with a corresponding decrease in the controlled fluid outlet temperature	a higher outlet pressure with a lower fluid outlet temperature	no change	GS-0045
11	106	C	Which of the following statements is used to describe the term 'base' in reference to greases?	Texture of the grease under load.	Temperature at which the grease softens or melts.	Type of soap used in its production.	Temperature below which the grease will be ineffective as a lubricant.	
11	107	B	Closed impellers differ from open impellers in that closed impellers _____.	allow liquid to enter the eye from one direction only	have side walls which extend from the eye to the outer edge of the vane tips	have small impeller eyes	are not vented above the impeller eye	
11	108	A	The floating end of a shell-and-tube type cooler utilizes a packing ring to _____.	prevent leakage past the floating end tube sheet	dissipate heat	baffle cooling water so it can be directed on a multiple pass	modify to a mixer type cooler	
11	109	B	A MODU having continuous closely spaced transverse strength members is _____.	longitudinally framed	transversely framed	cellular framed	web framed	
11	110	A	With respect to centrifugal pump design, which of the following descriptions best represents a pump utilizing two impellers?	Multistage	Axial flow	Dual coupled	Parallel flow	
11	111	D	What is the length of the stud used to secure the packing gland shown in the illustration?	1 inch	1 1/4 inches	1 1/2 inches	2 1/2 inches	GS-0012
11	112	C	Which of the listed pipe sizes is not commonly used?	3/8 inch	1/2 inch	5/8 inch	3/4 inch	

11	113	C	As shown in the illustration, the maximum shaft diameter is _____.	0.562 inches	0.622 inches	0.625 inches	0.628 inches	GS-0016
11	114	C	When using a sling psychrometer to determine relative humidity, the indicated difference between the dry bulb and the wet bulb reading is the _____.	relative humidity	dew point	wet bulb 'depression'	partial saturation temperature	
11	115	A	The static positive suction head of a pump is the _____.	distance of the suction liquid level above the center line of the pump	distance the suction liquid level is below the center line of the pump	force necessary to overcome frictional losses in the pump and piping	amount in inches of mercury the total suction head is below atmospheric pressure	
11	116	B	A grease lubricated ball bearing or roller bearing will run cooler if the grease _____.	fills only 10% of all void spaces within the bearing	has a high grease penetration number (is hard)	is thinned with a suitable lubricating oil	is heated prior to packing the bearing	
11	117	A	The ash content of a fuel oil is significant to the operating engineer because it _____.	is an indication of the amount of noncombustible material present in the oil	indicates the quantity of energy released by burning a unit amount of the fuel	is useful for determining proper atomization temperatures	reflects the overall thermal efficiency of the fuel oil service system	
11	118	B	What is the diameter of a cylinder whose cross-sectional area is 706.86 square inches?	36"	30"	24"	15"	
11	119	A	On a MODU, the deck stringer is the outboard most deck _____.	plating	beam	stiffener	stanchion	
11	121	C	The reading on the vernier caliper scale shown in figure "C" in the illustration is _____.	4.015 inches	4.715 inches	4.340 inches	5.925 inches	GS-0082
11	122	D	Which pipe listed has the largest outside diameter?	A 3/4" pipe with a standard wall thickness.	A 3/4" pipe with an extra strong wall thickness.	A 3/4" pipe with a double extra strong wall thickness.	All have the same outside diameter.	
11	123	A	The reading on the vernier caliper scale shown in figure "F" in the illustration is _____.	2.505 inches	2.650 inches	3.125 inches	3.210 inches	GS-0082

11	124	A	The sum of the sensible heat and the latent heat of any substance is known as _____.	total heat	residual heat	specific heat	superheat	
11	125	B	Expansion of the tube bundle in a shell-and-tube type cooler may be provided for by the _____.	packing and lantern rings	floating end tube sheet	shell foundation bolts	directional transverse baffles	
11	126	C	The pressure produced within the oil wedge of a rotating journal is _____.	the same as the pressure in the lubricating system	less than the pressure in the lubricating system	greater than the pressure in the lubricating system	highest at the oil groove location	
11	127	C	The reading indicated on the micrometer scale shown in the illustration is .3350 inches. Which of the figures listed represents this reading?	Figure A	Figure B	Figure C	Figure D	GS-0081
11	128	B	Which combination of the main shaft segments listed below, that are located furthest from the main engine, are connected by the inboard stern tube shaft coupling?	Line shaft and thrust shaft	Line shaft and stern-tube shaft	Thrust shaft and stern-tube shaft	Stern-tube shaft and tail shaft	
11	129	A	Compared to internal structural plating, the exterior hull plating on a MODU is usually _____.	stronger	thinner	more corrosion resistant	a lower grade steel	
11	130	C	The gasket and the broken studs have been replaced on a tank manhole cover. Which of the following methods is satisfactory for testing the repair?	Pressurize the tank with 10 psig air, soap the repaired area, watch for visible signs of leakage or bubbles.	Fill the tank with water via the ballast pump until the innage reading corresponds to the maximum depth of the tank.	Hose test the repaired area with a minimum of 100 psig water pressure.	Fill the tank via the ballast pump until water flows from the vent line opening on deck.	
11	131	D	What is the distance between the center of the discharge outlet and the top of the motor illustrated?	34 5/8 inches	35 inches	35 5/8 inches	36 inches	GS-0011
11	132	C	Piping cross-sections over 12 inches in diameter are sized by the _____.	inside diameter	wall thickness	outside diameter	threaded diameter	

11	133	A	The static suction lift of a pump is the difference in elevation between the _____.	centerline of the pump and the level of the liquid in the suction well when the source of liquid is below the pump	centerline of the pump and the suction liquid level when the source of liquid is above the pump	centerline of the pump and the level of the discharge liquid	liquid levels of the suction and discharge	
11	134	A	The heat identified by only a change in temperature is known as _____.	sensible heat	latent heat	total heat	residual heat	
11	135	B	Referring to the table shown in the illustration, your vessel has just taken aboard 30,000 gallons of fuel with an API gravity of 35.2 at 60°F. Your vessel's specific fuel consumption at full power is 0.5 lbs. per Hp-Hr. How many hours will the fuel last if it is all burned in the 10,000 hp main engine?	36.2	42.4	48.6	54.8	GS-0149
11	137	B	A fuel tank on your vessel is 20 feet high, 20 feet long and 20 feet wide. If it is filled 100% with fuel having an API gravity of 35.7 at a temperature of 60°F, how many long tons of fuel are in the tank?	177.76	188.25	196.47	210.84	GS-0149
11	138	C	The usual number of single-acting pistons used in a variable stroke axial-piston pump is _____.	3 or 5	5 or 7	7 or 9	9 or 11	
11	139	A	Which device shown in the illustration should be used to check valve clearances in a diesel engine fitted with solid lifters?	A	B	C	D	GS-0073
11	140	B	Regarding the oil cooler shown in the illustration, the purpose of the internal shell baffles is to _____.	allow the water to make four passes over the tubes	allow the oil to make four passes over the tubes	prevent oxidation and coking of the lube oil as it passes through the cooler	prevent erosive tube failure due to high-velocity flow in the core	GS-0122

11	141	D	In the pump shown in the illustration, what is the distance from the bottom of the inlet to the bottom end of the motor shaft?	45 1/4 inches	45 5/16 inches	53 5/8 inches	57 5/8 inches	GS-0011
11	142	B	Piping cross-sections ranging from 1/8 inch to 12 inches in diameter, are sized by _____.	wall strength	nominal inside diameter	outside diameter	threaded diameter	
11	143	B	An axial piston pump differs from a radial piston pump as the pistons of an axial piston pump are positioned _____.	radially from the shaft	parallel to each other and to the shaft	parallel to each other but at a right angle to the shaft	at an angle to each other and to the shaft	
11	144	B	In reference to air conditioning, when air attains the maximum amount of moisture it can hold at a specific temperature, it is said to be _____.	superheated	saturated	condensed	convected	
11	146	C	Positive displacement, helical gear pumps are well suited for pumping oil because _____.	stuffing boxes eliminate the leakage problems usually associated with other gear pumps	it is not necessary to closely maintain design clearances with this pump	they are essentially self-priming and produce a high suction lift	these pumps are designed with extreme tooth angles	
11	147	A	The conical steel or composition cone installed on a propeller, known as a fairwater cone, provides which of the following benefits?	Reduce turbulence	Help with lubrication	Protect against electrolytic corrosion	All of the above	
11	148	B	The exposed portion of the outboard propeller shaft is protected against seawater corrosion by _____.	a heavy lubricant	a covering of plastic, rubber, or shrunk-on composition sleeve	a corrosion-resistant paint	a layer of oxidation formed when the metal of the shaft is exposed to seawater	
11	149	B	Why are removable sleeves installed on centrifugal pump shafts?	They make it easier to replace the pump shaft packing.	They can be economically replaced as they wear out.	They can be removed when it is necessary to lighten the weight of the pump.	They increase the strength of the shaft.	

11	150	A	In order for the reducing valve, shown in the illustration, to properly function, a control port is utilized between _____.	the underside of diaphragm "E" and the outlet	the inlet side and the outlet side	the underside of diaphragm "E" and the inlet	the top of piston "H" and the outlet	GS-0044
11	152	C	Piping is sized by its nominal _____.	inside diameter regardless of other parameters	outside diameter regardless of other parameters	inside diameter from 1/8 inch to 12 inches, and over 12 inches by its outside diameter	inside diameter from 1/8 inch to 24 inches, and over 24 inches by its outside diameter	
11	153	C	A good quality oil used in main propulsion engine lubrication systems should be _____.	free from all chemical additives	quickly chemically oxidized	resistant to permanent emulsification	readily saponified with water	
11	154	B	When air at a given temperature, contains the maximum amount of moisture for that temperature, the air is said to be _____.	superheated	saturated	condensing	evaporating	
11	155	A	Which type of space heating systems is shown in the illustration?	Steam heating	Circulated hot water heating	Electric element heater	Forced hot air heating	GS-0150
11	156	C	Which of the listed types of pumps is NOT likely to be installed in a main drainage or evacuation system?	Reciprocating pump	Centrifugal pump	High pitch rotary vane pump	Eductor pump	
11	157	D	In the illustration, which of the listed valves would be omitted from a unit heater installed in an occupied space?	Return check valve	Gate valve	Thermostatic trap	Pneumatically controlled supply valve	GS-0150
11	158	B	In a compression type grease cup, the lubricant is forced into the bearing by _____.	gravity flow	spring force	a pressure gun	a zerk fitting	
11	159	C	The term referring to the number of teeth per inch on a hacksaw blade is known as the _____.	set	rake	pitch	thread gauge	
11	160	D	The valve shown in the illustration uses port "J" to _____.	open the auxiliary valve	open the main valve	bleed off downstream pressure beneath the operating piston	allow downstream pressure to be sensed by diaphragm "E"	GS-0044
11	161	D	In the illustration shown, the notation 1/8"R indicates a one-eighth inch _____.	recess on one end of the tool	rough finish on both ends of the tool	45°Chamfer on both ends of the tool	radius on one end of the tool	GS-0016

11	162	B	Which of the following statements represents the advantage of rotary pumps as compared to reciprocating pumps?	The high discharge pressure of the rotary pumps permits a larger volume of fluid per unit time than the reciprocating pump.	Rotary pumps are capable of pumping more fluid than reciprocating pumps of the same weight.	Rotary pumps occupy only one-half the space of reciprocating pumps.	Rotary pumps eliminate discharge slippage of the pumped liquid, while this does not hold true for a reciprocating pump.	
11	163	B	Which of the following factors will have the greatest effect on the heating load within a conditioned space?	Solar gain	Infiltration and ventilation air	Occupants inside the space	Entertainment equipment within the space	
11	164	D	Which of the following terms represents the form of heat removed from the refrigerant in the condenser of a refrigeration system?	Latent heat of vaporization	Heat of compression	Superheat	All of the above	
11	165	C	Which of the devices listed should be used to reshape a grinding wheel?	A round nose tool	An oil stone	A wheel dressing tool	A sharp nose tool	
11	166	D	Water leaking through the stern tube stuffing box is used to accomplish which of the following actions?	Cooling	Lubrication	Flushing	All of the above	
11	167	B	Water hammer in a steam heating system can be caused by _____.	filling the auxiliary boiler with cold water	steam admitted to a cold pipe	filling the auxiliary boiler with hot water	draining a soot blower line before cracking the steam supply valve	
11	168	B	Main propulsion engine lube oil sumps should be constructed _____.	so as to never be integral with the main engine foundation	with a sloped bottom	only of nonferrous, noncorrosive metals	with drain/return lines terminating just above or at the designed normal level	

11	169	A	A major controlling factor in the location of the condensate return piping from a heating system is/are _____.	the requirement for a gravity return	the requirement for short laterals run	the requirement to minimize conflict with headroom and other services	all of the above	
11	170	D	If the existing vapor pressure is subtracted from the indicated pressure at the pump suction, the remainder is the _____.	pump head	total suction head	discharge head	apparent net positive suction head	
11	171	A	The reading indicated on the micrometer scale shown in the illustration is .9680 inches. Which of the figures listed represents this reading?	Figure A	Figure B	Figure C	Figure D	GS-0081
11	172	D	A first stage unloader installed in a low pressure air compressor is unable to completely retract. This will result in _____.	overheating of the discharge valve	loss of moisture in the air charge in the receiver	frequent lifting of the intercooler relief valve	an abnormally low intercooler pressure	
11	173	C	Items #68 and #78 as shown in the pump illustration are identified as the _____.	shaft keyways	wearing rings	bearing retainers or spacers	journal bearings	GS-0143
11	174	C	The heat removed from the refrigerant in the condenser of a refrigeration plant is the _____.	latent heat of expansion	sensible heat of condensation	heat of compression	all of the above	
11	175	C	The discharge side of the pump illustrated is identified by the letter '____.'	A	B	C	D	GS-0129
11	176	C	When conducting a hydrostatic test on the distillate cooler shell of a flash type evaporator, liquid appears well inside one of the tubes. In order to correct this, you should _____.	reroll the tube	seal weld the tube	plug the tube	all of the above would be considered satisfactory as a temporary repair until permanent repairs may be conducted	
11	177	D	Excessive leakage and premature failure of valve packing is a result of _____.	opening a valve too quickly	jamming a valve in the closed position	low pressure fluid flow through the pipeline	a scored valve stem	

11	178	D	Which of the following problems may be encountered by using an oil having a viscosity higher than that specified for an operating hydraulic system?	External seal leakage.	Hunting due to fast response.	Hydraulic oil film breakdown.	Increased power consumption.	
11	179	C	Water leaking from a pump packing gland is kept away from the bearing housing by the use of _____.	shaft sleeves	lantern rings	water flingers	water seals	
11	180	B	An inadequate reciprocating bilge pump discharge is most often caused by _____.	defective intake valves	clogged suction strainers	scarred cylinder walls	clogged drain valves	
11	181	A	Which of the following statements is correct regarding the device shown in the illustration?	The areas dimensioned 0.64 in length are flats on the shaft.	The areas dimensioned 0.64 in length are steps in the shaft diameter.	If the piece is symmetrical about the 3/16 hole, the threaded ends have longitudinal tolerance dimensions of 0.789 inch to 0.825 inch.	All the 0.03 under cuts must be taken into account when adjusting lengths to meet the specified tolerances.	GS-0008
11	182	D	Which of the listed problems could produce a high absolute pressure within a flash type evaporator?	production of high salinity distillate	seawater feed temperature below 165°F	a leak in the first stage demister	a cracked distillate pump vent line	
11	183	B	Which of the following conditions should be used to support the need to change the lube oil when there has been an increase in the neutralization number?	A decrease in the viscosity of the oil	An increase in the viscosity of the oil	A change in the cloud point	A change in the floc point	
11	184	D	The dew point of air is reached when the wet bulb temperature is _____.	twice the dry bulb temperature	10°F above the dry bulb temperature	5°F above the dry bulb temperature	equal to the dry bulb temperature	
11	185	B	The purpose of bilge keels is to _____.	lower the center of gravity of the ship	reduce the amplitude of roll	reduce pitching	reduce yawing	

11	186	D	A casing drain is provided for axial piston and bent axis variable stroke pumps to _____.	vent off any accumulated air from the system	drain off any accumulated water from the pump casing prior to its being started	assist the complete removal of hydraulic oil from the system prior to opening for major or minor repairs	prevent damage due to agitation and overheating of oil accumulated in the casing as a result of minor internal leakage	
11	187	B	Before the longitudinal carriage feed of a lathe is engaged, you must be certain the _____.	spindle clutch is disengaged	carriage clamp screw is loosened	carriage stop clamp is tightened	thread dial indicator is zeroed	
11	188	B	Increasing the speed of a rotary pump above its rated speed will result in which of the following conditions to occur?	Loss of suction	Increased clearances	Decreased clearances	Decreased slippage	
11	189	C	The function of lubricating oil is to _____.	maintain even distribution of bearing wear	maintain a constant oil temperature	maintain a pressurized fluid film between moving surfaces	remove entrained water	
11	190	B	Which of the devices listed is used to maintain a snug interface between the rotating and stationary seal members shown in the illustration?	notch and keyway	spring	bellows	seal retaining ring	GS-0071
11	191	B	The illustration is drawn to a scale of 3/8 inch = 1 inch. What is the full size dimension of "X", if the scale lengths for "E" = 5/8", "F" = 1 3/8", "G" = 2 1/8", and "H" = 5 3/4"?	1.625 inches	4.333 inches	6.094 inches	15.333 inches	GS-0007
11	192	A	The tendency for lubricating oil to thin out at high temperatures and thicken at low temperatures will be characterized by a _____.	low viscosity index	high viscosity index	high neutralization number	low demulsibility quality	
11	193	B	After packing is added to the stern tube stuffing box, which of the following procedures should be observed to insure even tightening of the gland?	Listen for a smooth, regular sound.	Measure the distance between the gland and the stuffing box with a rule.	Judge by feeling the gland for an increase in heat as it is being tightened up.	Open the drain connection to allow seawater to flow in and make the distance even.	

11	194	A	The temperature at which water vapor in the atmosphere begins to condense is called the _____.	dew point temperature	condensation temperature	psychometric temperature	absolute humidity temperature	
11	195	B	One function of the air receiver in a compressed air system is to _____.	dry the air discharged from the intercooler	minimize the system's line pulsations	receive exhaust air from pneumatic accessories	remove all traces of oil from the air	
11	196	A	If a drill press is used to completely bore through a metal plate, feed pressure on the drill bit should be eased as the bit breaks through the bottom of the hole to prevent _____.	the drill bit from jamming and spinning the workpiece	drilling undersized holes	overspeeding the spindle	overheating the drill	
11	197	B	Which of the following statements describes the purpose of the split inflatable seal installed aft of the primary seal assembly for the propeller shaft?	To serve as a seal when adding packing to the stuffing box.	To allow repair or replacement of the primary seal elements when the ship is waterborne.	To eliminate leakage via the propeller shaft when the shaft is not rotating.	To provide a ready means for the entry of cooling water.	
11	198	D	Why should a person who is performing maintenance on an air compressor, wire and tag the system valves closed?	To prevent the unexpected.	To protect the equipment.	To protect the operator performing the maintenance.	Each of the above is correct.	
11	199	B	With regard to the opening and closing of watertight appliances not fitted with a remote operating control or alarm system, which of the following is the master or person in charge of a MODU required to enter in the logbook?	The time required to close the appliances.	The reason for opening or closing each appliance.	The name of the person performing the opening and closing of such appliances.	The fact that the hull indicators functioned or not.	
11	200	C	One of the main differences between the various types of screw pumps is in the _____.	stuffing box diameter	direction of rotation of the screws	pitch of the screws	type of driving gears	
11	201	B	The shaft shown in the illustration has an overall length of 42 inches in addition to the following dimensions of "A" = 8", "B" = 8", "C" = 10", and "D"=8 3/16" The tapered length "X" is _____.	6.375 inches	7.812 inches	8.185 inches	8.312 inches	GS-0133

11	202	A	In the spring-loaded, steam pressure, reducing valve shown in the illustration, the high pressure steam _____.	acts to close the main valve "K"	acts to open the auxiliary valve "D"	acts directly on the lower part of the main piston "H"	bleeds pressure off the controlling diaphragm "E" via the high pressure port "C"	GS-0044
11	203	D	The thread form shown in the illustration is called a/an _____.	Buttress thread	Whitworth thread	Acme thread	Sharp V-thread	GS-0087
11	204	A	The FIRST thing to do to ensure that a refrigeration unit will not start while undergoing repairs, is to _____.	secure and tag the electrical circuit	place a crow bar in the flywheel of the unit	inform all persons in the area not to start the unit	make a log book entry	
11	205	C	Propeller pumps are used primarily where there is a need to move a large volume of liquid. However, their use is limited by a maximum total head of _____.	10 to 20 ft	20 to 40 ft	40 to 60 ft	60 to 80 ft	
11	206	B	The reading on the vernier caliper scale shown in figure "D" in the illustration is _____.	1.815 inches	1.820 inches	2.115 inches	2.820 inches	GS-0082
11	207	B	Which of the components listed is used to connect several sections of line shafting?	Inboard stern tube couplings	Bolts fitted through flange type couplings forged integral with the shaft sections.	Muff type outboard couplings	All of the above types	
11	208	B	At which of the following locations would a duplex pressure gage most likely be located?	Fuel oil service pump discharge flange	Fuel oil strainer	Fuel oil heater	Fuel oil flow meter	
11	209	C	Why is the discharge pressure of a herringbone gear pump steadier than the discharge pressure of a simple spur gear pump?	Clearance between the gear teeth and casing is smaller.	The gear teeth are smaller than those of the simple spur gear pump.	One discharge phase begins before the previous discharge phase has been completed.	The herringbone gear pump has four spur gears instead of two.	
11	210	B	The part labeled "B" of the illustrated bearing is called the _____.	thrust ring	outer race	inner race	cage	MO-0001

11	211	C	Which of the following actions, pertaining to saltwater lubricated stern tube stuffing boxes, is usually observed when the ship is expected to be in port for an extended period?	The stuffing box is continually flushed.	The drain connection is left opened.	The stuffing box gland is tightened.	The packing is adjusted for greater cooling or replaced.	
11	212	A	A bourdon tube-type steam pressure gage is fitted with a siphon loop to prevent damage from _____.	extreme thermal stress	the admission of condensate	pressure shock	differential expansion rates	
11	213	C	The thread form shown in the illustration is called a/an _____.	Whitworth thread	Square thread	Acme thread	Standard thread	GS-0088
11	214	D	In a refrigeration system, the refrigerant absorbs the latent heat of vaporization in the _____.	compressor	condenser	receiver	evaporator	
11	215	A	The convector shown in the illustration, should have a circulation air space of approximately _____.	0.5"	0.6"	5.0"	The air space dimension is not given.	GS-0150
11	216	D	Oil emulsification in engine lubricating oils will tend to _____.	decrease sludge formation in lubricating oil	cause water to separate from the oil	improve the lubricating oil viscosity	displace lubricating oil required in areas of friction	
11	217	B	In the system illustrated, which of the following readings should be indicated on the pressure gage, if the load (x) is 8000 lbs (3632 kg) and the piston area (y) is 10 sq. in (64.5 sq. cm)?	80 psi (5.63 kg/cm2)	800 psi (56.31 kg/cm2)	8,000 psi (563.1 kg/cm2)	80,000 psi (5631 kg/cm2)	GS-0062
11	218	C	The conical steel or composition cone installed on a propeller, known as a fairwater cone, provides which of the following benefits?	Reduces turbidness	Helps with lubrication	Protects the nut	All of the above	

11	219	C	While at normal sea speed, rudder movement suddenly stops but is restored after changing over the power units. At the earliest opportunity, the faulty power unit is restarted with the following results: Movement of the helm causes all of the solenoids to energize as required, however the rotary actuator does not rotate. Control of the rudder does not exist with the use of the trick wheel, even though the main pump appears to be operating normally. The probable cause is _____.	the failed power unit was left in the 'non-follow-up' mode when the steering gear was tested	pump "G" is unable to produce required discharge	pump "I" is unable to produce required discharge	leakage of the servo actuators at the main pump	GS-0123
11	220	A	An aligning punch is used to _____.	line up corresponding holes in adjacent parts	completely loosen a jammed bolt	mark centers and lines in layout work	make a starting mark for a drill	
11	222	A	Which of the gasket materials and/or types listed is typically used on high pressure steam flange joints?	Spiral wound composition thermiculite	Wire-impregnated sheet asbestos	Rubber	Wire-impregnated rubber	
11	223	A	The taper produced by a lathe taper attachment is determined by setting the _____.	guide (swivel) bar	automatic cross feed	tailstock off center	compound rest angle	
11	224	B	The only means of removing the latent heat of condensation from a refrigerant in the normal refrigeration cycle is by _____.	passing it through the expansion valve	condensing refrigerant in the system condenser	passing the gaseous refrigerant through the heat interchanger on the suction side of the compressor	maintaining a high pressure on the system's receiver	
11	225	D	The converter pneumatic control bypass valve, shown in the illustration, receives its high pressure signal from the _____.	hot water return manifold	converter	hot water circulating pump discharge line	hot water supply line	GS-0151
11	226	C	One characteristic of a lubricating oil adversely affecting the results of centrifuging is _____.	high TBN value	low oil floc point	low oil demulsibility	low oil neutralization number	

11	227	D	Which of the listed devices is used to control the admission of steam to the steam cylinder of a reciprocating pump?	Valve operating differential	Crosshead arm	Pump rod	Pilot valve and operating rod	
11	228	D	In the illustration, the temperature of the hot-water heating system is controlled by the temperature of the hot water supply and the temperature of the _____.	central station	room being heated	hot water return	outside air	GS-0151
11	229	A	Which of the devices listed prevents water from entering a ship's hull via the propulsion shaft?	Stern tube packing or mechanical shaft seal	Deflector ring and drain	Spring bearings	Oiler rings	
11	230	A	With reference to a vessel's structural integrity, the most significant characteristic of a cryogenic liquid is its _____.	capability of causing brittle fractures	highly corrosive action on mild steel	vapor cloud which reacts violently with saltwater	toxicity at atmospheric pressure	
11	231	A	While at normal sea speed the rudder movement stops, but is restored after changing over power units. At the earliest opportunity the faulty power unit is placed in operation with the following results: The main pump discharge/return pressures are equal and there is no rotation of the rotary actuator, regardless of the direction of helm input. The probable failure is the _____.	solenoid coil #2 in component "F" has burned out	stroke control linkage has mechanically failed with "M"	solenoid coil #3 in component "F" has burned out	replenishing circuit relief valve is stuck open	GS-0123
11	232	A	A boiler forced draft pressure gage indicates 6 inches of water. This corresponds to a pressure of _____.	.216 psi	.288 psi	.433 psi	.688 psi	
11	233	A	To obtain a 1/2 inch per foot taper on an 18 inch work piece, the tailstock of the lathe must be set over _____.	3/8 inch	1/2 inch	3/4 inch	7/8 inch	
11	234	A	The heat required to change a substance from a solid to a liquid while at its freezing temperature, is known as the latent heat of _____.	fusion	vaporization	condensation	sublimation	

11	235	D	A wrench that completely surrounds a nut, or bolt head is a/an _____.	adjustable wrench	open end wrench	tappet wrench	box wrench	
11	236	C	Which of the following problems occurring in a hydraulic system can be caused by the use of an oil having a viscosity lower than specified?	Seal deterioration	Fast response and hunting	Increased power consumption	Oil film breakdown	
11	238	B	The degree to which the viscosity of an oil will change with a change in temperature is indicated by the _____.	weight designation	viscosity index	pour point	thermal change value	
11	239	D	Which of the listed reciprocating pump parts control the position of the pilot slide valve?	Moving tappets	Adjusting of the tappet collars	Stay rods	Movement of the main piston through the steam cylinder	
11	240	A	Which of the processes listed consumes the greatest amount of power while producing the greatest amount of heat?	Overcoming sliding friction	Overcoming rolling friction	Overcoming fluid friction	Overcoming oil wedge friction	
11	242	B	The reading indicated on the micrometer scale shown in the illustration is .680 inches. Which of the figures listed represents this reading?	Figure A	Figure B	Figure C	Figure D	GS-0081
11	243	D	Which of the following guidelines is considered to reflect good design practices of shipboard steam heating systems?	Provide constant steam service for equipment operating throughout the year.	Provide either a common or individual reducing station for each group of units requiring the same operating pressure.	Run all piping so it may be drained by gravity.	All of the above.	
11	244	B	The heat required to change a substance from a liquid to a gas without experiencing a temperature change, is defined as the latent heat of _____.	fusion	vaporization	sublimation	condensation	
11	245	B	The average density of brine discharged from the last stage of a fresh water evaporator should not exceed _____.	1.0/32nds	1.5/32nds	2.0/32nds	3.0/32nds	

11	246	C	A distinguishing feature of an eductor, when compared to other pumps, is the _____.	discharge end being smaller than the suction end	small size of impeller	lack of moving parts	ease at which the wearing rings may be changed	
11	247	B	While at normal sea speed the rudder movement stops, but is restored after changing over power units. At the earliest opportunity the faulty power unit is restarted with the following results: the rudder can be remotely swung in only one direction, however using the trick wheel equal movement of the variable stroke control device from neutral is available. The probable cause is _____.	only the solenoid coil 'F2' has burned out	either solenoid coil 'F1' or 'F3' has burned out	shaft "K" has developed a fault in the mechanical linkage	that pump "G" can not develop adequate discharge	GS-0123
11	248	C	When securing a flash-type evaporator for an extended period of time, you should _____.	fill the unit with saltwater	fill the unit with descaling compound	completely drain the unit	tightly seal the unit to exclude air	
11	249	B	The portion of a hydraulic hose that determines its overall strength, is the _____.	inner tube	braided inner layer(s)	outer cover	outer armor	
11	250	D	Which features of a centrifugal pump reduce the need for renewing worn impellers and pump casings?	Close radial clearance between impeller hub and casing	Low rotational speed of impeller	Removable end plate	Replaceable impeller and casing wearing rings	
11	251	B	A centrifugal pump may fail to deliver water when first started if the _____.	water seal pipe is plugged	pump is not primed	seal ring is improperly located	impeller is flooded	
11	252	D	A weight of 1,000 kips is equivalent to _____.	1,000 pounds	2,000 short tons	2,240 pounds	500 short tons	
11	253	A	Which of the devices listed is common to all types of pumps?	A power end and fluid end	A propeller and educator	A volute and impeller	A turbine and piston	
11	254	C	Heat which brings about a change in the physical state of a substance without a change in temperature, is called _____.	specific heat	sensible heat	latent heat	ambient heat	
11	255	C	The hulls of most modern towing vessels constructed today are fabricated from _____.	wrought iron	high alloy steel	mild steel	corrosion resisting steel	
11	256	B	A roller bearing should normally be filled to what fraction of its space cavity?	Less than 1/4	1/3 to 1/2	1/2 to 3/4	More than 3/4	

11	257	A	Which of the listed parts is used in a lobe-type rotary pump to allow for wear on the lobe edges?	Replaceable gib inserts	Spur gear adjusters	Casing gear thrust bearings	Replaceable liner plates	
11	259	A	A boiler forced draft pressure gage indicates 8 inches of water. This corresponds to a pressure of _____.	.288 psi	.433 psi	.688 psi	.833 psi	
11	260	B	The size of flexible hose used in a hydraulic system is indicated by _____.	the inside diameter of the tube	the numerical designation found on the 'skin' of the hose	a color code on the armor	the thickness of the tube wall	
11	261	C	If a centrifugal pump vibrates and is noisy when operating, the cause could be _____.	worn gland sealing shaft	worn wearing rings	a bent shaft	reversed pump coupling	
11	262	B	Which of the wrenches listed is least likely to slip off a bolthead or nut?	Open end wrench	Box end wrench	Crescent wrench	Spanner wrench	
11	263	B	Expansion tanks when used in a ships hot water heating system, may be of the open or closed type. In a closed type system, what would be the normal temperature range of the water?	180°F to 212°F	220°F to 240°F	260°F to 280°F	320°F to 360°F	
11	264	D	Latent heat can be defined as the heat which must be added to a substance in order to change it from a _____.	solid to liquid	liquid to vapor	solid to vapor	all of the above	
11	265	C	The designation 'schedule 80 extra strong ' refers to _____.	weight of steel plate	tensile strength of bolts	piping wall thickness	tubing bursting strength	
11	266	A	The reading indicated on a vernier micrometer caliper scale is .2613 inches. Which of the figure in the illustration represents this reading?	Figure A	Figure D	Figure E	Figure G	GS-0083
11	267	D	Tapping threads into a blind hole should be finished by using a _____.	short tap	taper tap	plug tap	bottoming tap	
11	268	D	Distilled water from an evaporator may be discharged into a potable water tank _____.	through a detachable hose connection	after passing through an activated charcoal filter	after chemical analysis shows it is fit for consumption	through a solenoid operated three-way valve	

11	269	D	The factors that determine the service life of packing in a pump will include which of the following conditions?	type of pump	condition of the shaft	length of time in use	all of the above	
11	271	D	If the capacity of a centrifugal pump decreases gradually over a long period of time, you should replace the _____.	packing gland	mechanical seals	lantern rings	wearing rings	
11	272	D	What is the reading of the vernier micrometer caliper scale shown in figure "C" in the illustration?	0.4258 inch	0.4528 inch	0.4628 inch	0.4678 inch	GS-0083
11	273	D	To absorb the wear resulting from impeller rotation and abrasives in the liquid, a centrifugal pump is usually fitted with _____.	lantern rings	bearings	casing volutes	wearing rings	
11	274	A	Personnel working with refrigeration systems, and subject to the exposure of refrigerants should wear _____.	face shield	a respirator	rubber gloves	an all purpose gas mask	
11	275	C	The ability of a metal to be hammered, or rolled out is called its _____.	ductibility	elasticity	malleability	fusibility	
11	276	C	A pressure reading of 00.0 psig is theoretically equal to _____.	30.0 inches of vacuum	300 millimeters of water	14.7 psia	00.0 psia	
11	277	C	If the foundation bolts of a reciprocating air compressor are loose, which of the conditions below will occur?	The drive belts will squeal	The unloaders will jam shut	The compressor will vibrate	The intercooler will leak	
11	278	A	Hot water heating system converters are selected for the heating load required plus about 50% excess capacity to allow for _____.	start-up and scaling	unusual high demand on the system	increase capacity during times of peak demand	increase steam and water contact for better efficiency	
11	279	D	Gate valves should not be used for throttling as _____.	the pressure drop will be excessive	air binding will develop	the installation of an equalizing line will be necessary	wire drawing of the disc will result	
11	280	C	To finish tapping a blind hole, it is best to use a _____.	taper tap	finishing tap	bottoming tap	plug tap	

11	282	C	Which of the listed types of 'hole' is represented by "B" as shown in the illustration?	Counterbore	Countersink	Counterdrill	Spotface	GS-0015
11	283	C	The purpose of an air compressor unloading device is to _____.	drain water from the air receiver	drain water from the cylinders	delay the compression process until the motor is up to speed	check pump alignment	
11	284	D	The amount of moisture in a given sample of air, when compared with the amount of moisture the air could hold if totally saturated at the existing temperature of the sample, is called _____.	absolute humidity	specific humidity	effective humidity	relative humidity	
11	285	D	Which of the copper alloys listed is commonly used in heat exchangers and possesses a high resistance to corrosion?	Red brass	Manganese bronze	Copper beryllium	Cupro-nickel	
11	286	C	Antifriction bearings can be removed undamaged from a shaft by using an arbor press, or wheel puller with a _____.	ring gage	split die	split washer or backup ring	jack screw	
11	288	A	Which of the following statements is correct relative to distillation plant operation?	Distillation is the process of boiling seawater to produce vapor which is condensed into fresh water.	Evaporation is the second part of the distillation process where brine is removed.	Brine is the result of condensed sea water vapor.	Distillate is the product resulting from the evaporation of fresh water vapor.	
11	289	A	A leaking steam trap located in the return lines from a heating system is indicated by excessive _____.	drain tank steaming	scale returning from the convectors	steam pressure in the convectors	water in the heating system	
11	290	D	The minimum length of dimension "C" shown in the illustration is _____.	27/32 inch	11/16 inch	21/32 inch	33/64 inch	GS-0014
11	291	C	If a centrifugal pump is driven by a constant speed electric motor and produces a discharge pressure less than designed, the cause is probably _____.	excessive pump speed	excessive suction head	worn wearing rings	gross pump misalignment	

11	292	C	At high pressures, an O-ring has a tendency to extrude into the clearance space between the mating parts of a hydraulic actuator. Which of the listed components is used to prevent extrusion?	Double seal ring	Lathe cut ring	Backup ring	Static washer	
11	293	C	The bearings for the illustrated pump are lubricated by _____.	a small self-contained forced feed pressurized oil system	packed grease	oil feed rings rotating through an oil bath	a drip feed oiler cup	GS-0129
11	294	B	The ratio of the weight of moisture contained in a given volume of air, to the weight of moisture that the same sample would hold if saturated, is called the _____.	absolute humidity	relative humidity	specific humidity	total humidity	
11	295	B	Which of the listed chemicals can be routinely used to maintain the hygienic quality of potable water?	Hydrochloric acid	Chlorine	Sulfuric acid	Zinc chromate	
11	296	D	Which of the following statements concerning antifriction bearings installed on pumps is true?	The inner race should be free to turn on the shaft.	The outer race should be free to turn its housing.	Alignment is not a critical factor in their installation.	They are usually pressed on to their shafts.	
11	297	C	The steam coils in a high pressure evaporator used for saltwater service should be descaled with _____.	a needle gun	soap and water	a wirebrush	a chipping hammer	
11	298	D	The packing installed in the pump stuffing box is lubricated by _____.	gravity and feed oil cups	grease cups	hand during installation	leakage through the stuffing box	
11	299	C	If you were operating a centrifugal water service pump with worn wearing rings, the _____.	pump would be very noisy	pump would vibrate excessively	pump would develop insufficient flow	stuffing box would leak excessively	
11	301	D	The included angle of the chamfer in the knurled portion of the tube sizing tool illustration is _____.	5°	10°	20°	30°	GS-0014

11	302	C	Which of the listed materials have been used to manufacture piping available in standard weight, extra strong, and double extra strong wall thickness?	Plastic	Copper	Iron	All of the above	
11	303	C	A lathe dog, fitted with a headless set screw, is known as a _____.	clamp lathe dog	standard lathe dog	safety lathe dog	common lathe dog	
11	304	A	The moisture sensitive element of a humidistat can be made of _____.	hair	copper	plastic	steel	
11	305	C	Which of the following statements is correct regarding an oil with a high viscosity index?	A large change of viscosity occurs with a minor change in temperature.	No change in viscosity occurs with any change in temperature.	Very little change in viscosity occurs with a significant change in temperature.	The viscosity of the oil increases with an increase in temperature.	
11	306	A	An organic solid lubricant, such as graphite, is suitable as an oil additive when used in _____.	machinery bearings subjected to high temperatures	antifriction bearings on general service pumps	bearings subject to fluctuating loads	line shaft bearings	
11	307	C	Ferrous metals are metals containing _____.	no iron	a large percentage of copper	a large percentage of iron	a large percentage of aluminum	
11	308	C	Which of the following clearance readings should be taken and recorded in dry-dock?	The clearances between the propeller blade tips and the hull.	The clearances between the propeller hub and the fair water cone.	The rudder bearing clearances.	The clearances between the stern tube packing gland and the retaining ring.	
11	309	B	Brine density in a distilling plant is measured with a/an _____.	psychrometer	salinometer	anemometer	sphygmomanometer	
11	310	C	For the various sizes of tubing and wall thickness used in a hydraulic system, the inside diameter can be determined if it is remembered that the inside diameter equals the outside diameter less _____.	the wall thickness	1.5 times the wall thickness	2 times the wall thickness	2.5 times the wall thickness	

11	311	D	In the illustrated drawing, the feature indicated by the measurement 1/8" is an example of _____.	camber	radius	taper	chamfer	GS-0016
11	312	C	Which of the following statements is correct regarding grades of pipe?	Stainless steel pipe is manufactured in four general grades.	Brass pipe is manufactured in three common grades.	Copper pipe is manufactured in two common grades.	The term 'extra strong' is normally associated with schedule 160 steel pipe.	
11	313	A	Which of the following definitions accurately describes 'tool feed' when referring to lathe work?	The distance the tool advances with each revolution of the work.	The distance from the bottom of the cut to the uncut surface of the workpiece.	The distance the workpiece circumference moves past the cutting tool point in one minute.	The chip length that will be removed from the work in one minute.	
11	314	B	When handling contaminated oil from a hermetically sealed refrigeration compressor unit that has burned out its motor, you should _____.	store the oil in a clean refrigerant drum	use rubber gloves	circulate the oil through a filter drier	remove the oil with a portable charging cylinder	
11	315	B	The greatest difference between absorbent and adsorbent filters is that absorbent filters _____.	will remove additives from the lube oil	soak up liquid contaminants directly into the filter media	do not create pressure drops in the lube oil system	attract or have liquid contaminants stick to the surface of the filter media	
11	316	C	The graphite in a bearing lubricant compound of graphite grease, acts as a _____.	low temperature sealer	moisture barrier	filler to smooth surface irregularities	coolant to carry away heat	

11	317	B	Which of the following statements describes the function of an alarm annunciator on an engine room alarm panel?	An alarm condition causes a light and siren to come on which remain on until the machinery is secured.	An alarm condition causes a flashing light to illuminate indicating the malfunction, followed by an audible alarm. When the alarm acknowledge button is depressed, the audible alarm is silenced and light stops flashing but remains illuminated.	An alarm condition gives an audible and visual alarm signal, both of which are secured when the alarm acknowledge button is depressed.	An alarm condition causes a flashing light to come on, followed by an audible alarm. When the alarm acknowledge button is depressed, the warning light is extinguished.	
11	318	C	When replacing ball bearings on an electric motor shaft, you should _____.	tap the outer race with a mallet	apply even pressure to the outer race	apply even force to the inner race	apply pressure evenly to both the inner and outer races	
11	319	D	The pump packing gland has been repeatedly tightened by small increments until the gland has bottomed. Which of the actions listed should be carried out next if the leakage continues to be excessive?	Replace all of the packing.	Replace with larger cross-sectional turns of packing.	Replace the soft packing with packing turns that are covered with lead wrap.	Continue to add more turns of packing.	
11	320	B	Copper is sometimes used for fluid power lines because it _____.	has good resistance to high temperatures	has high resistance to corrosion	withstands heavy vibration under heavy system loads	resists hardening under stress	
11	321	C	Excessive lost motion in the valve mechanism of a duplex reciprocating pump will cause the _____.	pump to short stroke continuously at both ends of the stroke for both cylinders	pistons to stop in mid-stroke	pump to operate sluggishly	cushioning valves to wear	

11	322	D	One of the main functions of wearing rings, as used in a centrifugal pumps, is to _____.	maintain radial alignment between the pump impeller and casing	absorb all impeller shaft end thrust	prevent water leakage to the atmosphere	prevent wear of the pump casing and/or impeller	
11	323	C	An inverted gate valve (stem pointing downward) may be subject to wear sooner than a similar valve installed in the upright position because _____.	the gate's full weight is upon the stem	the gland stud nuts are under more pressure	sediment collects in the bonnet	the packing will not properly adhere to the stem	
11	324	B	For safe storage, the maximum allowable temperature to which refrigerant bottles should be exposed is _____.	100°F	125°F	150°F	175°F	
11	325	D	Adsorption filters are not commonly used in steam turbine or diesel engine lubricating systems because they _____.	utilize exotic and expensive filtering media making them too costly for use.	are only effective at temperatures below 100°F	can adsorb no more than five times their weight in water	remove additives from the lube oil	
11	327	D	A graphite filler commonly mixed with grease, acts _____.	as a mild abrasive	to smooth surface irregularities	to lower the friction coefficient	all of the above	
11	328	A	Main engine room control console alarms are to be of the self monitoring type, meaning that an open circuit to a particular alarm circuit will _____.	cause an alarm condition	secure power to the indicator	cause a backup power supply to energize	automatically reclose within 10 seconds	
11	329	C	When removing roller bearings from a shaft, the force of the puller should be applied to the bearing _____.	outer race	raceway	inner race	retainer plate	
11	330	B	After installing a new hydraulic pump in a system, what special attention should be given to the hydraulic system?	The relief valves in the system should be readjusted.	The filters and strainers should be checked frequently.	All system pressure should be readjusted.	The system should be drained and renewed with a fluid of different operating characteristics.	

11	331	C	A pounding noise occurring in one cylinder of a steam reciprocating general service pump could be caused by _____.	lower than normal supply steam temperature	lower than normal supply steam pressure	improper adjustment of steam cushion valves	loss of air charge in the pump discharge plenum chamber	
11	332	D	An unloader is installed on an air compressor to _____.	bypass the high pressure stage to the low pressure stage on 100% of the air compressors in service	prevent excessive interstage pressure buildup	control compressor discharge pressure	remove all but the frictional load during starting	
11	333	C	Which of the speeds listed represents the synchronous speed rating of the lube oil pump motor shown in the illustration?	1,000 RPM	1,150 RPM	1,200 RPM	1,250 RPM	GS-0011
11	334	D	People familiar with ammonia refrigeration systems become accustomed to its odor and may forget that the vapors _____.	in a low concentration can cause death	will dissolve in perspiration and cause caustic burns	will burn or explode	all of the above	
11	335	B	The speed of a radial piston hydraulic MOTOR is controlled by varying the _____.	amount of cylinder block offset with respect to the rotor	fluid flow rate discharged to the motor	length of the motor piston stroke on the power cycle	pintle discharge rate to the suction side of the pump	
11	336	A	A thread chaser is a hand tool that should only be used for _____.	restoring damaged threads	enlarging existing threads	cutting original threads	straightening tapered threads	
11	337	B	Which of the following statements best describes an oil lubricated stern tube bearing installation?	It receives its oil supply from a branch line of the main lube oil system.	No shaft liner is needed in the area of the babbitted bearing surface.	The system pressure must be lowered when maneuvering in port to prevent blowing the outer oil seal.	For precise regulation of the bearing temperature, the system is required to have its own oil cooler.	
11	338	A	Which of the following is operated from the main engine room console on an automated vessel?	Fire pump and lube oil pump	Lube oil pump and distilling plant	Distilling plant and shaft alley door	Shaft alley door and fixed CO2 release	

11	339	C	The best method of fixing a winch motor bearing of the sealed type that is running hot is to _____.	add grease through the zerk fitting	allow the winch to run at slower speeds only	replace the bearing with a new one	apply a light oil to the bearing housing	
11	341	D	When piston rod packing persists in leaking on a reciprocating steam pump, the cause may be _____.	a loose tappet collar	clogged suction strainers	an open snifter valve	misalignment of the crosshead guide	
11	342	B	Which of the wrenches listed practically eliminates the possibility of its slipping off while tightening a nut or bolt?	Open end wrench	Box end wrench	Crescent wrench	Monkey wrench	
11	343	A	Which of the pipe materials listed has the best resistance to internal and external corrosion?	cast iron pipe	cast steel pipe	spiral welded pipe	centrifugally cast pipe	
11	344	D	Ammonia when used as a refrigerant is valuable because of its high efficiency, it is however _____.	toxic	flammable	explosive	all of the above	
11	345	B	Which of the following valve arrangements permits the reciprocating pump liquid piston to take suction from the suction chamber, and simultaneously discharge through the discharge chamber during the up and down strokes?	Two sets of suction and discharge valves in the liquid cylinder.	Two sets of valves, one set each for suction and discharge located in the water chest.	One set of valves in the water chest and another set in the liquid cylinder.	Two relief valves, one on each of the liquid cylinder.	
11	346	D	A thread die will be easier to start if the end of the piece of material to be threaded is slightly _____.	peened	reamed	center drilled	chamfered	
11	347	C	On tankers using manually operated tank valves, the deck hand wheel indicator registers the _____.	exact lift position of the tank valve disk, through 100% of its operation	oxygen content of the tank	approximate number of turns the tank valve has been opened	level of oil in the tank	
11	348	A	Item "B" in the pump illustration is the _____.	packing gland	stuffing box	shaft sleeve	wearing ring	GS-0129

11	349	A	After adding grease to a ball bearing with a handheld grease gun, you should _____.	run the machine with the bearing housing drain plug open for a short while	close the bearing housing drain and add a little extra grease to compensate for air pockets in the bearing	remove the grease fitting and leave open to allow excess grease to escape	save the used grease for chemical analysis	
11	350	A	Which of the following terms is used to identify the pressure of the liquid entering a pump?	Suction head	Pump head	Discharge head	Total head	
11	351	A	Which of the following conditions would prevent a steam reciprocating pump from delivering its rated capacity?	Excessive suction lift	Air trapped in the discharge expansion chamber	A leaking snifter valve allowing air to enter the suction side of the pump	All of the above	
11	353	D	A pipe coupling is a fitting having _____.	outside threads on one end and inside threads on one end	outside threads on both ends	a left-hand twist	inside threads on both ends	
11	354	C	When subjected to high heat from a open flame, or an electric heating element, which of the listed refrigerants will break down and produce phosgene gas?	CO_2	Methyl chloride	R-22	Sulphur dioxide	
11	355	B	The construction of the main propulsion engine lube oil sump should _____.	have no plating	joints of 90°	retain the lube oil as long as possible before it recirculates through the system	provide drain/return lines that are no greater than 24 inches from the pump suction	be provided with only a perfectly horizontal bottom
11	356	A	Demulsibility of a lube oil is defined as _____.	the ability of oil to separate from water	the temperature at which oil flows rapidly	a measure of the water in a lube oil system	an emulsion of different grades of oil	

11	357	B	The clearance volume for a single stage compressor is defined as the space created between the _____.	top of the piston and bottom side of head, with the piston at BDC	piston and head, including the space around the piston to the top of the upper ring and under the valves, with the piston at TDC	bottom of the piston and bottom side of the head at TDC, regardless of upper ring location and valve placement	top of the piston and bottom side of the head at TDC as compared to that which exists between the top of the piston and bottom side of head at BDC	
11	358	D	Admitting steam to an improperly drained heating system could result in _____.	cutting valve seating surfaces	high velocity slugs of water in motion in the system	damage due to water hammer	all of the above	
11	359	B	Figure "C" shown in the illustration correctly identifies the position of the journal when the shaft is _____.	just at the moment prior to being stopped	just beginning to rotate	increasing its speed to required operating speed	operating at its normal operating speed	GS-0121
11	360	D	New piping and tubing to be installed in a hydraulic system can be safely degreased by using _____.	alcohol	a water-based detergent	carbon tetrachloride	a special petroleum solvent	
11	361	B	If the discharge valve is closed before the drive motor is stopped, which of the following types of pumps will most likely be damaged?	Centrifugal	Gear	Propeller	Turbine	
11	362	B	Over pressurization of an air compressor intercooler is prevented by the _____.	aftercooler relief valve	intercooler relief valve	last-stage unloader	first-stage unloader	
11	363	D	When the relief valve opens it discharges high pressure refrigerant vapor to the _____.	liquid strainer	refrigerant inlet of the condenser	inlet side of the evaporator	suction side of the compressor	
11	364	B	Dichlorodifluoromethane when vaporized in the presence of an open flame, will form _____.	carbon dioxide gas	phosgene gas	trichlorodifluoro methane	sulphur dioxide	
11	365	C	The main lube oil sump of a main propulsion engine should be constructed of _____.	coated steel plating to reduce corrosion	nonferrous metal plating to prevent corrosion	clean steel plating	pinchback plating	

11	366	D	The ability of an oil to separate cleanly from an oil and water mixture is referred to as its _____.	precipitation number	neutralization number	pour point	demulsibility	
11	367	C	Which of the following statements is true concerning the overall efficiency of air compressors?	High pressure compressors are more efficient than low pressure compressors.	Mechanical efficiency divided by compressor efficiency will equal the overall efficiency of the compressor unit.	Two stage compressors are generally more efficient than single stage compressors.	The volumetric efficiency is decreased in multistage compressors.	
11	368	C	The vessel's steering gear is a classic example of a positioner type automation system. The variable input is provided through the steering wheel, and the rudder position is fed back to the operating mechanism. The difference between the input signal and the follow-up signal, until matched and cancelled, is the _____.	system differential	proportional band	error	command input	
11	369	A	You would close the illustrated valve "A" by _____.	turning the handwheel clockwise, as viewed from the top	first loosening part #4, closing the valve, then retightening part #4	turning the handwheel counterclockwise, as viewed from the top	first loosening part #8, then turning the handwheel clockwise as viewed from the top	GS-0140
11	370	C	Erosive tube failure in a heat exchanger can result from _____.	high temperature	waterside fouling	excessive cooling water velocity	poor heat transfer	
11	371	B	The torque rating of a fluid power motor is expressed in _____.	RPMs under a given load condition	inch-pounds at a given pressure	foot-pounds per piston stroke	foot-pounds per rate of input flow	
11	372	D	In addition to a pressure gage and a relief valve, an air receiver should be fitted with a _____.	sight glass and manhole	thermometer and sight glass	thermometer and manhole	drain connection	

11	373	A	The device shown in the illustration is used to _____.	unload the cylinders of an air compressor	reduce the pressure in the ship's service air system	grind sewage prior to entering the sewage treatment plant	maintain correct tension on the drive belts while the compressor is in operation	GS-0029
11	374	B	In the presence of an open flame or hot surfaces, chlorinated fluorocarbon refrigerants decomposes and form _____.	petroleum crystals	phosgene gas	water vapor	carbon monoxide	
11	375	D	If the refrigeration system shown in the illustration has only one liquid line strainer, the strainer will be located between points _____.	1 and G	G and C	J and F	D and K	RA-0012
11	376	B	The illustrated device operates on the principle that the height of the column is _____.	directly equal to the height of the liquid in the tank	directly proportional to the pressure developed at D	equal to the fluid pressure supplied at B	equal to the pressure of the square root of the height of liquid H, times .833	GS-0066
11	377	C	To obtain maximum efficiency, two stage air compressors are usually _____.	horizontally mounted	never fitted with intake filters	fitted with intercoolers	operated in an unloaded condition at all times	
11	378	B	In a pneumatic automation system, a unit producing a signal to govern the position of the controller of the measured variable, relative to the value of the measured variable, is said to have _____.	reset action	proportional action	two position action	rate action	

11	379	C	To make the pieces shown as "A" in the illustration a locational interference fit _____.	the piece with the hole must be heated until the inside diameter of the hole is .245 inches +/- .001	do nothing, this is a close sliding fit but there is no way to make it a locational interferance fit and a close sliding fit is an acceptable alternative	turn down a new shaft with a diameter of .250 inches +.001/- .000	hone the shaft until the roughness value is 50 microinches (.005 inch clearance)	GS-0019
11	380	D	The function of the hydraulic telemotor transmitter used in an electro-hydraulic steering gear system is to _____.	transmit the rudder angle to the bridge indicator	prevent the control linkage from striking the stops when hard over	automatically purge all entrained air from the system	send hydraulic signals to the receiving unit	
11	381	A	Which of the following statements is/are true regarding hydraulic pumps in general?	Variable volumes can be obtained with gear pumps only by variation of the pump drive speed.	A radial piston pump houses sliding pistons in a stationary cylinder block through which passes a rotating pintle or ported shaft.	The amount of fluid displaced per revolution of an axial piston rotary pump is maximum when the angle of the tilting box is at right angles to the shaft.	All of the above.	
11	382	A	Spring reinforced oil seals are generally installed with the tail or lip of the seal facing _____.	toward the oil pressure being sealed	toward the bearing preload washer	away from the oil pressure being sealed	away from the bearing housing recess	GS-0152
11	384	B	R-12 is generally considered to be a safe, nontoxic, nonflammable, and nonexplosive refrigerant. It can, however, become highly toxic when _____.	superheated outside the system	in contact with an open flame	heated to the boiling point	all of the above	
11	385	C	The difference between the pressure at a point being measured and that of a perfect vacuum is known as _____.	internal pressure	gauge pressure	absolute pressure	external pressure	

11	386	B	The diameter of a hole drilled for tapping threads into a piece of stock should be _____.	larger than the tap diameter	smaller than the tap diameter	the same size as the tap diameter	the same size as the bolt diameter	
11	387	B	In a low pressure air compressor, the loss of volumetric efficiency normally results from _____.	adiabatic compression in the intercooler	heating of the air leaving the cylinders	inaccurate valve timing	constant enlargement of the clearance expansion volume	
11	388	D	The seal piping obtains liquid from the discharge side of the pump and directs the liquid to the _____.	packing gland	wearing ring	stuffing	lantern ring	
11	389	A	While attempting to read a tank level indicator, the mercury column drops rapidly. This may indicate _____.	a leak in the gage line	free surface effect in the tank	an improperly calibrated gage	excess air in the balance chamber	
11	390	C	Lint from cleaning rags can be harmful to hydraulic systems because the lint _____.	can cause rusting of internal parts	breaks down hydraulic fluid	can clog filters and promote component leakage	solidifies and causes cracked lines	
11	391	D	In the hydraulic transmission shown in the illustration, the "B" end is a _____.	low pressure hydraulic pump	variable displacement hydraulic pump	constant speed hydraulic motor	fixed displacement hydraulic motor	GS-0057
11	392	D	An important point of consideration when replacing a dry type intake filter on an air compressor is to _____.	use the same wetting oil on the element as is used in the compressor lubrication system	install a smaller size filter to allow for expansion of the element	install only a filter consisting of a treated paper element	select the proper size filter so that air flow is not restricted	
11	393	D	A refrigeration system contaminated with moisture can be affected by _____.	acid formation	sludge formation	ice in the expansion valve	all of the above	
11	394	D	Some chlorinated fluorocarbon refrigerants may decompose into a toxic irritating gas if it is _____.	stored at temperatures below 60 degrees Fahrenheit	charged into a system having copper fittings	allowed to mix with compressor oil	exposed to an open flame or hot surface	

11	395	D	Which of the following statements describes the relationship between viscosity and specific gravity?	Liquids with different viscosities will always have the same specific gravity.	Liquids with different viscosities will never have the same specific gravity.	Viscosity and specific gravity are directly proportional.	Viscosity and specific gravity are not related in that one does not define or limit the other.	
11	397	B	The delivery rate of a variable stroke axial piston hydraulic pump is controlled by varying the position of the _____.	slide block	tilting box	pintle	reaction ring	
11	398	B	Biasing, in a pneumatic automated combustion control system, refers to a set amount of increase or decrease in the _____.	control pressure	loading pressure	supply pressure	rate relay pressure	
11	399	D	If you suspect that a gage is sticking and giving an inaccurate reading, you should _____.	blow out the gage line with compressed air	tap the gage body with a wrench	remove the gage bezel and slightly move the needle	replace the gage or have it calibrated	
11	400	D	One advantage of a triple-effect low pressure submerged tube distilling plant over a double-effect unit is _____.	better water purity	less scale formation	less internal corrosion	greater evaporator efficiency	
11	401	A	In the illustration shown, what is the proper description of the hole represented by "C"?	Counterbored	Countersunk	Counterdrilled	Spotfaced	GS-0015
11	402	B	Which of the following descriptions should be included when identifying the length for pipe nipples?	Fully threaded, half threaded, long, and short	Close, short, long, and tank	Standard, extra-strong, double extra-strong, and schedule 80	Cast, wrought, stainless, and brass	
11	403	B	To drill a hole in round stock, perpendicular to the axis of the piece, the stock should be mounted in a _____.	collet	V-block	clamp	morse sleeve	
11	404	A	For the proper control of the air temperature in an air conditioning system using chilled water circulation, which of the listed conditions should remain constant regardless of load changes?	Chilled water system supply temperature.	Chilled water system return temperature.	Compressor discharge temperature.	Compressor suction pressure.	
11	405	B	Which of the following is NOT an identifiable characteristic of a steam reciprocating pump?	Direct-acting	Diffuser	High-pressure	Vertical	

11	406	B	The pressure of a liquid leaving the pump can be referred to as the _____.	total head	discharge head	net positive suction head	suction head	
11	407	C	Obstructed suction passages in the casing or pintle of a radial piston hydraulic pump will cause the _____.	pump back pressure to decrease	pump return and discharge pressures to equalize	pumped fluid volume to decrease	pump discharge flow to drop to zero	
11	408	B	Potable water piping systems installed aboard ships must be _____.	disinfected monthly with a chlorine compound	independent of all other piping systems	cadmium lined to prevent internal corrosion	flushed each time potable water is taken onboard	
11	409	C	A pressure gage pointer responding sluggishly to changes in pressure, should be repaired by _____.	tapping the gage housing lightly	bending the needle to free the linkage	cleaning the residue from gear teeth	greasing the hair spring	
11	410	B	Tube leaks in the distillate cooler of a two stage flash evaporator will result in _____.	loss of second stage vacuum	contamination of the distillate	lower feed inlet temperature	contamination of the second stage condenser	
11	411	B	The device illustrated is known as a _____.	semi-balanced rudder	unbalanced rudder	horn-hung rudder	balanced rudder	GS-0101
11	412	C	The threaded pipe fitting called 'street elbows' have _____.	male threads only	female threads only	male and female threads	interrupted threads on each end	
11	413	D	Failing to decrease the feed pressure on a drill as its point begins to break through the bottom of the work piece will cause the drill to _____.	break cleanly through the bottom of the workpiece	cut an elongated hole in the bottom of the workpiece	form a tapered hole in the bottom of the workpiece	jam in the workpiece and tend to whirl it around	
11	414	C	Coast Guard Regulations (46 CFR) require a method for the relief of an over pressurized refrigeration system. Which of the following statements complies with these regulations?	The relief valve from the receiver must relieve to the condenser first.	The relief valve settings shall be 1 1/4 times the maximum allowable working pressure.	A rupture disk may be fitted in series with the relief valve.	The rupture disk shall burst at a pressure not higher than 10% above the relief valve setting.	
11	415	C	Air leakage between the shaft and stuffing box packing in a centrifugal pump is prevented by _____.	a compressed packing gland	lantern rings between the packing rings	a liquid seal	the stuffing box gland	
11	416	D	The suction-force principle of operation is a typical characteristic of _____.	centrifugal pumps	jet pumps	propeller pumps	reciprocating pumps	

11	418	C	In an automation system, increasing or decreasing the loading pressure by a set amount is known as _____.	positioning	proportioning	biasing	controlling	
11	419	B	A fuel oil tank pneumercator will give an inaccurate reading if the _____.	pneumercator is recharged with the air supply open	pneumercator balance chamber bleed orifice is blocked by the oil being measured	pressure in the system is allowed to equalize	operating cock is placed in the 'vent' position when the system is not in use	
11	420	B	Which of the following statements represents an advantage of a triple-effect submerged tube evaporator compared to a single-effect submerged tube evaporator?	Greater purity of distillate	Lower consumption of steam per pound of distillate produced	Less scale formation	Less complex to maintain and operate	
11	421	C	Hydraulic pumps most commonly used in steering systems are of the _____.	lobe type	screw type	axial piston type	volute type	
11	422	A	Fittings used to close the ends of pipe are called 'pipe _____'.	caps	ells	tees	closures	
11	423	B	When drilling blind holes with a standard drill press, the proper method of stopping the progress of the drill boring through the work is by _____.	moving the working table	using a depth stop	adjusting the spindle return spring	gaging chuck motion	
11	424	D	In a direct expansion type multi-box refrigeration system, the compressor is set up to cycle on and off by the _____.	pressurestat	high pressure cutout	solenoid valve	low pressure cutout switch	
11	425	C	An additive used to improve the ability of a lube oil to reduce friction is known as a/an _____.	suppressant additive	dispersant additive	extreme pressure additive	PH alkaline additive	
11	427	B	One advantage of a flash distilling plant when compared to a submerged tube distiller is _____.	greater distillate purity through high temperature evaporation	cold shocking for scale removal is not required	less internal corrosion because of lower brine density	less feedwater is required for equal plant capacity	

11	428	C	Potable and non-potable water systems aboard vessel _____.	may be temporarily interconnected with a removable spool	are permanently interconnected through a double stop valve	may never be interconnected by any means	may be connected if they are used only for wash water	
11	429	D	The term, whole depth of the gear, shown in the illustration, is equal to _____.	A + D	B + D	C + A	C + D	GS-0111
11	430	D	In an electro-hydraulic steering gear system, when will the variable displacement pump be placed on stroke?	When the helm is at any angle other than amidships.	When the six-way valve is opened.	When the ram relief valves lift.	When the rudder angle is different from the position of the helm.	
11	431	D	In application, which of the listed sealing devices is most similar to an O-ring?	V-ring	Cup seal	U-ring	Quad ring	
11	432	B	A 'close nipple' is a piece of pipe that is _____.	less than 1/2 inch long	threaded along the entire length	shorter than the nipple outside diameter	thread only on one end	
11	433	B	Which of the pumping systems listed for use aboard ship will most likely use a propeller type pump?	Fluid power transmission system	Main circulating system	Steering gear system	Fuel oil service booster system	
11	434	C	Which of the listed operations will cause an automatically controlled refrigeration compressor to restart?	Closing of the solenoid valve	Closing of the expansion valve	An increase in the suction pressure	Decreasing the suction pressure	
11	435	D	Which of the units of measurement listed below are used to express positive and negative suction heads when calculating pump head or hydraulic horsepower?	Inches of mercury for positive head and feet of water for negative head	Feet of water for positive head and inches of mercury for negative head	Inches of mercury for both positive and negative heads	Feet of water for both positive and negative heads	
11	436	B	The ability of lubricating oils to resist viscosity changes during temperature changes is indicated by the _____.	American Petroleum Institute number	viscosity index number	Seconds Saybolt Furol number	Seconds Saybolt Universal number	

11	437	D	The necessity of the six-way valve, as used on many older steering gears, has been replaced by _____.	a simpler two-way valve	check valves installed in the discharge/return lines of the steering gear pumps	servo control units installed on the main steering gear units	an automatic method of remotely changing over steering gear pumps	GS-0123
11	438	B	Which of the additives listed is used to reduce the foaming tendency of lube oil?	Emulsifiers	Suppressants	Depressants	Extreme pressure	
11	439	D	In ship construction, the shell plating is arranged in strakes and assigned letter designations. If the strakes were lettered "A" through "K", the "K" strake will be _____.	at the turn of the bilge	the keel strake	the drop strake	the sheer strake	
11	440	D	The suction side of the illustrated pump is identified by the letter '_____.'	A	B	C	D	GS-0129
11	441	B	The illustrated valve, figure A, needs to be repaired due to a leak across the valve disk. To disassemble the valve you should _____?	turn the hand wheel clockwise as viewed from the top, using a pipe wrench for assistance	first fully loosen part #8, then turn the handwheel clockwise to separate the bonnet from the body	first fully loosen part #8, then turn the handwheel counterclockwise to separate the bonnet from the body	tighten part #4	GS-0140
11	442	B	To connect two lengths of pipe previously set in place, you should use a pipe _____.	nipple	union	coupling	tee	
11	443	B	One of the steps required to increase the drilling speed of a drill press is to _____.	move the drive belt to a smaller diameter motor pulley	move the drive belt to a smaller diameter spindle pulley	change the terminal connections of the drive motor	change to a larger diameter spindle	
11	444	C	Saltwater is typically provided to a refrigeration system to _____.	cool the expansion valve	prevent refrigerant superheating	condense the refrigerant gas	prevent motor overheating	
11	445	D	Which of the following propeller materials will not require stress relief treatment after minor repairs, straightening of the tips or the thinning of the blade edges?	Manganese bronze	Nickel manganese bronze	Manganese nickel aluminum bronze	Nickel aluminum bronze	

11	446	A	Which of the figures illustrated correctly identifies the position of the journal while it is stopped?	A	B	C	D	GS-0121
11	447	D	As the designated rudder angle is being achieved, as a result of the original command input, the steering gear follow-up mechanism is _____.	in motion, providing a null input	not in motion, thus providing a null input	in motion, providing an input to place the main pump on maximum stroke	in motion, providing an input to place the main pump at null stroke	
11	448	C	Which of the additives listed is used to lower the pour point of a lubricating oil?	Emulsifiers	Suppressants	Depressants	Extreme pressure	
11	449	B	In ship construction, the strakes are given letter designations beginning with the letter 'A.' The "A" strake is adjacent to the _____.	deck edge strake	keel	turn of the bilge strake	sheer strake	
11	450	A	The clutch band of a constant tensioning mooring winch must be set up tight enough to drive the winch drum and should slip only when _____.	excessive loads are placed on the winch	minimum pull is being exerted by the winch	automatic operation of the winch is desired	wire is being retrieved at the maximum rate	
11	451	C	Under normal operating conditions, the rudder is hydraulically locked unless _____.	the manual trick wheel is engaged for steering	the variable stroke pump is off stroke	a rudder order is given by the control system	an electric power system failure occurs at the steering gear	
11	452	D	Temporary Certificates of Inspection for offshore drilling units are effective until the _____.	Operations Manual is approved	Minerals Management Service approval is issued	classification society approval is issued	permanent Certificate of Inspection is issued	
11	453	B	A tapered shank drill is removed from the drill press spindle with a _____.	taper punch	drill drift	vice grip	leather mallet	
11	454	D	In a direct expansion type cargo refrigeration system, a box is normally changed from chill to freeze by adjusting the _____.	hand expansion valve	compressor suction valve	solenoid bypass	back pressure regulating valve	
11	455	C	Lead wrapped flexible packing, rated for temperatures of up to 450°F and shaft speeds up to 1000 RPM, will not be suitable for use with _____.	monel metal shafts	steel shafts	bronze shafts	cast iron shafts	

11	456	B	Which of the following statements is correct concerning the viscosity of lubricating oil?	Viscosity will increase as temperature increases.	Viscosity is a measure of a fluid's internal resistance to flow.	Viscosity will decrease as temperature decreases.	Viscosity is not dependent on temperature.	
11	457	A	A command signal input to the steering gear has initiated rudder movement for 20° right rudder. The follow-up mechanism at the beginning of the rudder movement will _____.	be in motion with a null input	not be in motion, thus a null input	be in motion providing an input to place the variable stroke pump on maximum stroke	be in motion providing an input to place the variable stroke pump at null stroke	GS-0123
11	458	B	The pour point of lubricating oils is affected the most by which of the following?	Extensive centrifuging	Wax content	Water content	Acid content	
11	459	A	To prevent overheating and scoring of the shaft after repacking the stuffing box, which of the following procedures should be carried out?	Tighten the packing in small increments while the pump is operating.	Lubricate the lantern ring with cylinder oil before installing new turns of packing.	Tightening the gland in all the way and then backing it off slightly.	Operating the pump slowly and applying oil freely to the shaft until the packing is properly seated.	
11	460	A	When the hydraulic control lever for a deck winch is placed in the neutral or off position, the spring set brake on the fluid motor drive shaft is _____.	engaged by spring action and only released by hydraulic pressure	released by spring action and hydraulically locks the winch when the drum ceases rotating	engaged by spring action and is insured to be locked in place by hydraulic pressure	opened hydraulically and held open by spring action whenever the electrical supply is secured	
11	461	B	Which of the valve arrangements listed can be used to modify the four ram hydraulic steering gear system, shown in the illustration, to a working two ram system?	Close valves 'C3', 'C4', and open valves 'B1', 'B2'	Close valves 'C2', 'C4', and open valves 'B2', 'B4'	Close valves 'C1', 'C3', and open valves 'B1', 'B2', 'B3'	Close valves 'C1', 'C2', and open valves 'B3', 'B4'	GS-0067
11	462	B	The type of shaft coupling used on the pump illustrated is best described as a _____.	flexible grid coupling	solid coupling	gear coupling	jaw coupling	GS-0143

11	463	A	To remove a hand held right-handed straight cut reamer after it has gone all the way through a hole, you should _____.	turn the tap wrench clockwise, simultaneously raising the reamer	tap the reamer out with a softfaced hammer	turn the tap wrench counterclockwise, simultaneously raising the reamer	work the reamer side to side to dislodge it	
11	464	C	A pressure drop in the liquid line of a refrigeration system may cause _____.	the solenoid valve to seize	the compressor to hunt	flash gas to form in the liquid line	the expansion valve to freeze open	
11	465	D	Moisture and impurities can be removed from pneumatic systems by using _____.	air intake heaters	desiccated suction strainers	multi-orificed suction valves	blowdown valves and filters	
11	466	B	The viscosity of an oil is a measure of its _____.	weight	internal friction	demulsibility	S.A.E. number	
11	467	B	The purpose of the propeller fairwater cone is to _____.	lock the propeller nut in position	minimize water turbulence	eliminate axial thrust	eliminate cavitation	
11	468	B	Although lube oils used in the main lubricating service systems should have a relatively high flash point to avoid ignition, they can create smoke and fire hazards when they _____.	are exposed to a vacuum	come in contact with extremely hot surfaces	are reduced in temperature to just above the pour point	become extremely agitated or aerated	
11	469	B	Vertical transverse structures in the double bottom are known as _____.	pillars	floors	ceilings	stanchions	
11	470	B	The reading indicated on a vernier micrometer caliper scale is .8046 inches. Which of the figure in the illustration represents this reading?	Figure A	Figure B	Figure F	Figure G	GS-0083
11	471	D	When the helm is turned on the navigation bridge, which of the listed actions will be the FIRST response in the steering room on a ship equipped with an electro-hydraulic steering gear?	The pumps go to full stroke.	The six-way valve aligns itself with the running pump.	Both port and starboard cables are energized.	The synchronous receiver turns, duplicating the helm motion.	

11	472	C	Item "B" shown in the illustrated hydraulic circuit is used to _____.	act as a power source to operate the pumps indicated as "F"	act as a power source to operate the pump indicated as "E"	shut down the remotely operated electric motor driven pump when the watertight door has closed	shut down the operation of pump "E" when the watertight door has closed	GS-0103
11	473	A	If you are hand tapping holes in cast iron, you should _____.	tap the holes without cutting oil	flood the tap with mineral oil	chamfer the edges of the holes	start tapping with a plug tap	
11	474	D	Certificates of Inspection for offshore drilling units are issued for a period of _____.	24 months	36 months	48 months	60 months	
11	475	B	Permanent centrifugal pump shaft damage due to erosion, corrosion, and wear at the stuffing box is usually prevented by _____.	wearing rings	renewable sleeves	a hardened sprayed metal coating	internally flooded lantern rings	
11	477	D	On vessels using reach rods to manually control the tank valves, one turn of the hand wheel on deck will produce how many turns of the valve stem at the valve?	One-fourth of a turn	One-half of a turn	Three-fourths of a turn	One turn	
11	478	D	The flash point of most lube oils used in a main lubricating system should be approximately _____.	80°F to 100°F	140°F to 160°F	250°F to 300°F	350°F to 450°F	
11	479	D	The structural member shown in the illustration by the letter "M" is identified as a _____.	swash plate	deck frame or girder	bilge bracket	floor	GS-0086
11	480	D	Hydraulic cranes must be properly warmed-up before being operated because _____.	warm-up allows the hydraulic system to become charged with oil	warm-up allows the relief valves to be properly tested	hydraulic strainers operate only during the warm-up period	warm-up allows the hydraulic fluid to reach proper viscosity	
11	481	D	In an electro-hydraulic steering gear, any change in relative position between the synchronous receiver and the follow-up gear will result in _____.	the pump going to full stroke	closing of the six-way valve	driving the rams up against the stops	a corresponding slowing or increasing of the pumped flow rate	

11	482	B	Keyless propeller hubs secured to tail shafts by 'pilgrim nuts', are removed by _____.	spring-loaded jacks	hydraulic pressure	heating with a torch	hydraulic lever arms	
11	484	B	What is the reading of the vernier micrometer caliper scale shown in figure "B" in the illustration?	0.7996 inch	0.8046 inch	0.8460 inch	0.8550 inch	GS-0083
11	485	D	Which of the following statements describes the function of an air compressor intake filter?	Protects against suction valve float.	Provides a positive pressure on the air inlet valves.	Prevents lubricating oil contamination of the compressed air supply.	Protects against the damaging effects of airborne solid particles.	
11	486	B	Which of the listed characteristics of lube oil are the most important to the engineer from an operational standpoint?	Ash content, carbon residue, and gravity	Viscosity, acidity, and demulsibility	Pour point, flash point, and precipitation number	Autoignition point, viscosity index, and film strength	
11	487	D	Which of the following conditions will indicate a need for a finishing cut to be taken on the pump shaft?	Roughness	Deep ridges	Corrugations	All of the above	
11	488	B	A salinity indicating system functions on the basic principle of measuring the _____.	electrical inductance of water	electrical conductivity of water	specific gravity of water	hydrogen ion concentration of water	
11	489	B	In ship construction, the shell plating is arranged in strakes, with four of the strakes being specifically identified by name. The strake next to the keel is identified as the _____.	keel strake	garboard strake	bilge strake	sheer strake	
11	490	A	The number of screw threads per inch for a Standard National Coarse 1/2 inch bolt is _____.	13	16	18	20	
11	491	A	In the steering gear system shown in the illustration, if the maximum working pressure is applied to the face of the ram, the total force on the piston will be _____.	209,230 lbs	836,920 lbs	836,920 in.lbs	24,000,000 in.lbs	GS-0104

11	492	A	After conducting a boat drill on a mobile offshore drilling unit, which of the following is the master or person in charge required to enter into the logbook?	The condition of the equipment used during the drill.	The name of the lifeboatman in charge of each lifeboat.	The location of the vessel at the time of the drill.	The time it took to lower the boat.	
11	493	D	The reading on a vernier caliper scale is indicated as 2.368 inches. Which of the figures shown in the illustration represents this reading?	Figure A	Figure B	Figure D	Figure G	GS-0082
11	494	A	What class of bulkhead is required around the galley on a MODU?	Class A	Class B	Class C	Class D	
11	495	C	In a flash type evaporator, all saltwater headers are vented through individual vent cocks to the _____.	saltwater heater shell	second-stage condenser	atmosphere	second-stage flash chamber	
11	496	B	What is the reading of the vernier micrometer caliper scale shown in figure "E" in the illustration?	0.3001 inch	0.3101 inch	0.3151 inch	0.3251 inch	GS-0083
11	497	C	An axial piston, variable stroke pump is used in a vessel's hydraulic steering gear. Under pressure, oil continually leaks out from between the valve plate/ cylinder barrel and will _____.	cause loss of hydraulic oil from the system	result in extreme damage to the pump	cause damage to the pump if not continually drained from the pump casing	result in the system high side pressure to substantially drop off	
11	499	C	The garboard strake is located _____.	at the very bottom center	just under the sheer line	at each side of the keel	at the turn of the bilge	
11	500	C	A centrifugal pump vibrates excessively during operation. Upon disassembling the pump it is found that the impeller is out of balance. Without an available spare, you should _____.	drill holes through the heavy side of the impeller until it balances	weld counterweights to the light side of the impeller	remove metal from the heavy side by machining in a lathe	acid wash and scrape the heavy side until it balances	
11	501	C	Which of the tolerances listed is allowed on the outside diameter of the bushing illustrated?	.060 inch	.002 inch	.0005 inch	1.6015 inches	GS-0017
11	502	A	In the steering gear unit shown in the illustration, which of the actions listed will occur as 'left rudder' is being attained?	Ram cylinder "A" is under hydraulic pressure.	Ram cylinder "H" is relieving hydraulic pressure.	Ram cylinder "D" is under hydraulic pressure.	All of the above.	GS-0104

11	503	B	Lantern rings are provided on centrifugal pumps to _____.	allow illuminated inspection of shaft and packing	provide a passage for the stuffing box sealing liquid	adjust leakage at the shaft gland	allow for distortion of the wearing rings	
11	504	D	Moisture is removed from a refrigeration system by _____.	bleeding refrigerant from the condenser	opening a drain petcock on the oil separator	condensing the water in the heat exchanger	using a dehydrator cartridge	
11	505	A	Why will a two stage flash type distilling plant tend to operate more efficiently when operating in cold seawater?	The colder seawater passing through the condenser tube bundles of the various stages increases evaporator vacuum.	The amount of heated feedwater discharged from the feedwater heater aftercondenser is increased.	Fewer noncondensable gases are created by the flow of colder seawater.	More seawater is allowed to pass through the first stage overflow weir.	
11	506	D	Pipe friction during oil transfer will be the greatest during the transfer of a lubricating oil at 130°F with a viscosity index of _____.	65	80	90	100	
11	508	B	To maintain the design discharge pressure of a centrifugal pump, the clearance between the _____.	impeller and lantern ring is critical	impeller and casing wearing rings is critical	packing box and packing gland is critical	gland seal and packing gland is critical	
11	509	D	The garboard strake shown in the illustration is identified by the letter '____.'	B	D	E	F	GS-0086
11	510	C	Which of the listed pumps, shown in the illustration, is fitted with a relief valve on its discharge side?	Bilge pump	Ballast pump	General service pump	All of the above	GS-0042
11	511	D	The tolerance of the largest diameter of the tool shown in the illustration is _____.	+/- .006 inch maximum	+/- .003 inch maximum	+ .003 inch	+ .000 or - .003 inch	GS-0016
11	512	A	The steering gear unit shown in the illustration, which of the conditions listed will occur as 'left rudder' is being obtained and only the 'No. 1' steering gear pump is running?	Cylinder end "H" is under pressure.	Cylinder end "A" is relieving.	Cylinder end "E" is under pressure.	Cylinder end "F" is relieving.	GS-0104

11	513	C	A lantern ring is _____.	the bottom ring in a set of piston rings	the oil slinger on a spring bearing	used to distribute seal water throughout the pump stuffing box	the lifting ring on each running light	
11	514	A	Moisture in the refrigerant may _____.	freeze on the expansion valve seat and reduce the flow of liquid refrigerant	emulsify the oil in the condenser	freeze in the king valve	clog the oil trap	
11	515	B	Why would a flash type distilling unit be more efficient when operated in cooler seawater temperatures?	Steam carryover between stages is reduced.	Evaporator vacuum is increased.	The amount of available flash steam is decreased.	Feedwater flow from the feedwater heater is increased.	
11	516	B	The reading on a vernier caliper scale is indicated as 1.820 inches. Which of the figures shown in the illustration represents this reading?	Figure A	Figure D	Figure F	Figure G	GS-0082
11	517	A	When comparing a bent-axis, axial piston, variable stroke hydraulic pump, to a variable angle tilting box, axial piston pump where the number, diameters, and rotating speed of the pistons are the same, the significant difference is the _____.	maximum capacity	maximum pressure	minimum pressure	minimum capacity	
11	518	C	When using the draw file method, which of the listed types of files will produce a fine finish?	A double cut file	A bastard file	A single cut file	A second cut file	
11	519	C	The end joint formed by adjoining plates in a hull plating strake is properly identified as a _____.	bracket	scarph	butt	seam	
11	520	C	In which of the following descriptions would centrifugal pump impeller cavitation most likely occur if the impeller diameters, rotating speed, and liquid temperature are the same?	In the second stage of a two-stage pump.	A single-stage impeller with straight vanes.	A single-stage impeller with curved vanes.	A two-stage pump with an operating speed 100 RPM less than specified.	

11	522	A	Which of the following precautions should be observed concerning the introduction of a fire resistant fluid into a hydraulic system?	Deterioration of paints, seals, metals, and electrical insulation may occur.	Fluid viscosity always increases as a normal result of its use.	Decreased wear rates of components is an advantage of its use.	Only chemically active filters may be used.	
11	523	A	Marine sanitation devices installed on vessels must be certified by the _____.	U.S. Coast Guard	American Bureau of Shipping	Society of Naval Architects and Marine Engineers	Enviromental Protection Agency	
11	524	B	The reading indicated on a vernier micrometer caliper scale is .5260 inches. Which of the figure in the illustration represents this reading?	Figure C	Figure D	Figure F	Figure G	GS-0083
11	525	B	The condensers located in the various stages of a flash evaporator are cooled by _____.	distillate	seawater	brine	air	
11	526	C	When cutting external threads on a steel pipe with a die, you should _____.	start the die at a slight angle with the work to create tapered threads	tap the die with a hammer to break up the chips	continue turning until the end of the pipe has gone through the die and is flush with the die face	never use a lubricant	
11	528	D	Which of the following conditions is most likely to cause water hammer in the potable water system?	The hydro-pneumatic tank being half full of water	The starting of the potable water pump.	A low water level in the potable water storage tank.	Rapid closing of a spring closed basin faucet.	
11	529	D	The welded joint located between two plates in the same strake of hull plating is called a _____.	bracket	scarf	lap	butt	
11	530	B	The tendency of a flammable liquid to vaporize is indicated by its _____.	ignition temperature	flash point	flammable range	convection index	
11	531	A	Which of the conditions listed does the blueprint symbol shown in the illustration represent?	All surfaces are to be finish machined.	A groove must be machined at the points designated.	The thread form to be machined on the bolt.	The surface should be finished with a welded overlay.	GS-0028

11	532	B	When responding to a 'right rudder' command from the amidships position, which parts of the steering gear system illustrated will be subjected to the highest pressure?	"C" and "F"	"E" and "B"	"F" and "E"	"B" and "C"	GS-0137
11	533	B	On many modern tankers, which of the following devices is used to reduce cargo pump leakage to the pump room bilge?	Flinger rings	Mechanical seals	Shaft sleeves	Clipper seals	
11	534	D	Moisture entering a typical refrigeration system will most likely _____.	boil in the condenser	be removed by the liquid line strainers	cause sweating and frost on the evaporator coils	freeze in the expansion valve	
11	535	C	In a two stage flash distilling plant, which of the pumps listed is vented to the shell of the second stage in order to remove vapor from the pump suction?	Condenser circulating water pump	Feedwater heater drain pump	Distillate pump	Air ejector condenser drain pump	
11	536	B	The component which is used to thoroughly separate small, fine, dust-like particulate contamination from hydraulic fluid is a/an _____.	accumulator	filter	separator	strainer	
11	537	C	When discharge air pressure from the device shown in the illustration exceeds a preset value, the compressor will _____.	electrically shut down regardless of the discharge air temperature	release excess air by opening component "E"	unload excess air from the receiver via component "D"	unload excess air from the receiver via component "B"	GS-0120
11	538	D	Short cycling of the potable water pump is avoided by the proper use of a _____.	hydro-pneumatic tank completely filled with compressed air at system operating pressure	hydro-pneumatic tank filled with water	charge of air, at 20 psi (137.9 kPa) above system pressure with the hydro-pneumatic tank one quarter full of water	charge of air, at system pressure, when the hydro-pneumatic tank is half full of water	
11	539	D	Vertical structural members used to support and transmit downward forces of a load are called _____.	pillars	stanchions	columns	all of the above	

11	540	B	Thermostatic steam pressure reducing valves are used in the fuel oil service system to control the _____.	double bottom fuel oil tank temperature	heater supply steam flow	pressure of the fuel supplied to the burners	attemperator steam flow in the heater discharge circuit	
11	541	B	When the propeller blades are integral with the hub, the propeller is called a _____.	built up propeller	solid propeller	controllable pitch propeller	suction back propeller	
11	542	B	The best gasket material to use in cargo fuel oil lines is _____.	sheet asbestos	oil-resistant sheet packing	cork sheet packing	unvulcanized packing	
11	543	C	When fire safe or fire resistant fluid is to be used in a hydraulic system, it is important that _____.	the resultant pressure, due to the increase in fluid viscosity, is not excessive	the fluid does not dissipate too much heat	the fluid be compatible with all seal materials used	separate lube oil supply be furnished for the hydraulic pump	
11	544	D	Moisture in a refrigeration system can cause _____.	freezing the expansion valve closed	corrosion of system piping	improper temperature regulation	all of the above	
11	545	A	The reading indicated on a vernier micrometer caliper scale is .4678 inches. Which of the figure in the illustration represents this reading?	Figure C	Figure D	Figure E	Figure F	GS-0083
11	547	D	During the operation of the device shown in the illustration, the required compressed air output has stabilized within a pressure range of 100-110 psi. Which of the following statements of operating conditions is correct?	Component "B" is closed and will open when output pressure had dropped below 50 psi.	Component "D" is open and will close when output pressure rises above 110 psi.	Component "F" will force "E" to be driven to the full open position.	Component "E" is modulated proportionally in response to the required output.	GS-0120
11	548	B	The process of grinding, shredding, or reducing the size of sewage particles is known as _____.	detension	maceration	bulking	chlorinating	
11	549	D	In ship construction, which of the listed strengthening members act to support the decks?	Pillars	Girders	Bulkheads	All of the above	
11	550	D	The lowest temperature at which fuel combustion becomes self-sustaining in the presence of a source of ignition, is defined as the _____.	autoignition point	flash point	burning temperature	fire point	

11	551	C	The reading indicated on a vernier micrometer caliper scale is .6383 inches. Which of the figure in the illustration represents this reading?	Figure B	Figure D	Figure F	Figure G	GS-0083
11	553	C	What is the reading of the vernier micrometer caliper scale shown in figure "D" in the illustration?	0.5110 inch	0.5160 inch	0.5320 inch	0.5350 inch	GS-0083
11	554	C	Which of the problems listed could be indicated if a sight glass in the refrigerant liquid line is full of bubbles?	Proper refrigerant charge	Faulty expansion valve	Insufficient refrigerant	Solenoid valve stuck open	
11	555	B	When the air compressor is idle, the illustrated device should be in a functional position as "G" is _____.	compressed, "E" is seated and "F" is vented to the atmosphere	expanded, "E" is unseated and "F" is vented to the atmosphere	expanded, "E" is unseated and "F" directs compressed air from the receiver to the area at "A"	compressed, "E" is unseated and "F" directs compressed air from the receiver to the area at "A"	GS-0029
11	557	B	Using the information in the illustration shown, the tail of the welding symbol will _____.	designate the type of weldment	designate the welding specifications	specify the size of weldment	specify the direction of welding	GS-0030
11	558	D	During routine maintenance the bilge manifold valves are removed. Prior to resecuring the valve bonnets, the valve _____.	disks and seats should be checked and lapped if necessary	bonnet, flange gaskets should be renewed if they were cut or torn	stem packing should be renewed if the packing has hardened, the glands have bottomed out, or the glands cannot be tightened	all of the above	
11	559	A	Vertical support members used to strengthen bulkheads are called _____.	stiffeners	panels	stanchions	brackets	
11	560	A	In diagram "A", shown in the illustration, at what draft does the vessel displace 3000 tons?	9 ft	6 ft	3 ft	None of the above	SF-0024

11	561	A	Design characteristics of lubricating oil sump tanks will include _____.	installation of baffles to prevent excessive sloshing of oil	sufficient capacity to contain all the lube oil in the system except for the contents of the gravity tank	cooling coils made of welded seamless steel pipe	the bottom of the sump should be integral with the shell plating	
11	562	C	You would open the illustrated valve "A" by _____.	turning the handwheel clockwise, as viewed from the top	first loosening part #4, opening the valve then retightening part #4	turning the handwheel counterclockwise, as viewed from the top	first loosening part #8, then turning the handwheel counterclockwise as viewed from the top	GS-0140
11	563	D	When changing to a fire resistant hydraulic fluid in a system, it is important to check the compatibility of the new fluid with the system's _____.	seals	metals and plating	paint	all of the above	
11	564	B	Some refrigeration systems have chemical moisture indicators installed in conjunction with the sight glass in the liquid line. If excess moisture is present in the system, the indicator will _____.	activate the driers	change color	secure the compressor	add a predetermined amount of liquid drier	
11	566	D	Which of the following statements describes the functions of a reservoir used in a hydraulic system?	Dissipate heat	Trap foreign matter	Separate air from the oil	All of the above	
11	567	C	The advantages of flash type evaporators, as compared to submerged tube type evaporators, include _____.	less internal corrosion because of lower brine density	higher temperature evaporation for lower salinity of the distillate produced	less scale formation in a flash evaporator	less feedwater required for a flash evaporator	

11	568	C	The aft, starboard bilge-well can not be pumped out, and back flushing has not been successful. The next practical solution will be to carry out which of the following actions?	List the ship to port in order to pump out the bilges for the remainder of the voyage.	Place 20 gals. (75.7 L) of fuel oil tank-wash into the affected bilge well for one hour to dissolve the stoppage.	Take all necessary steps to properly and safely pump out the affected bilge well, then manually 'muck' it out.	Change over and use one of the two remaining bilge pumps to dewater the starboard bilge well.	
11	569	D	The double bottom in a vessel is a space comprised of _____.	plating forming the engine room tank top	doubler plating installed over the flat keel plate	a watertight boundary formed by the inner bottom	compartments between the inner and outer bottoms	
11	571	C	The welding symbol as shown in the illustration uses a circle to indicate a/an _____.	plug weld	field weld	all around weld	round fillet weld	GS-0030
11	572	A	Compared to a constant pitch propeller, a controllable pitch propeller _____.	more efficiently uses available engine power	operates at a lower efficiency at a fixed speed	produces the same torque at lower engine power	develops its rated power at a lower speed	
11	573	C	While responding to a right full rudder command from the amidships position, which of the cylinders illustrated will be fully pressurized on the face of the pistons?	"B"	"C"	"E"	"A"	GS-0104
11	574	A	A liquid indicator sight glass is useful in determining whether or not a refrigeration system is sufficiently charged. It is generally located in the _____.	high pressure liquid line	low pressure liquid line	high pressure vapor line	low pressure vapor line	
11	575	C	The tool best suited for cutting pipeline flange gaskets to the correct size is _____.	a pair of tin snips	a jack knife	a gasket cutter	a ball peen hammer	
11	576	D	A hand hacksaw blade is normally installed in the saw frame with the teeth pointing away from the saw handle, because _____.	the blade will always break if installed otherwise	cutting fluid must flow down the teeth	the blade will overheat if installed otherwise	cutting pressure is most easily put on the forward stroke	

11	577	B	One distinct advantage of flash type evaporators, as compared to most other evaporators, is that in a flash evaporator shell _____.	high temperature distillate can be recirculated to induce additional flashing	scale formation is not a severe problem	cold shocking is more effective in removing scale	water purity is greatly increased at high capacity	
11	578	B	The bilge system is unable to pump out the aft starboard engine room bilge-well due to the bilge-well suction being fouled. With two feet of water over the top of the bilge-well, which of the following actions should be carried out?	Send the wiper into the bilge-well with a scoop and pail.	Remove the effected bilge manifold valve and attempt to back flush the line.	Simultaneously operate all available bilge pumps.	Transfer half the contents of a drum of degreaser into the bilge well and pump out the bilge well with the system.	
11	579	D	The purpose of swash bulkheads is to _____.	minimize the effect of a listing condition	restrict flooding within a tank	separate cargoes in a common tank	reduce liquid movement and surging within a tank	
11	580	C	A vessel has a mean draft of 28 feet 08 inches. If the TPI immersion is 50 and the final forward draft is 30 feet 00 inches, what will be the after draft after taking on nine hundred tons of fuel oil?	30 feet 00 inches	30 feet 02 inches	30 feet 04 inches	30 feet 08 inches	
11	581	D	Which of the following statements is correct concerning the operation of the bucket type steam trap shown?	Condensate will flow from the valve opened by the rising bucket.	The bucket will not open the valve until the trap has been completely filled with condensate.	Condensate flow is continuously controlled by the permanently maintained operating level of the bucket.	The valve is opened by the sinking bucket.	GS-0048
11	582	B	A hacksaw blade is normally placed in the saw frame with the _____.	maximum possible tension on the blade	teeth pointing away from the handle	blade tooth set adjusted for maximum cutting width	teeth angled toward the saw handle	
11	583	B	Dual electro-hydraulic steering units usually operate _____.	with both pumps on line at the same time	with one pump on standby	with the follow-up gear disconnected	only when the rudder is moved amidships	

11	584	C	If a liquid sight flow indicator in a refrigeration system shows gas bubbles in motion passing inside of the glass, there is _____.	too much refrigerant in the system	oil entrained in the refrigerant	less than a full charge of refrigerant in the system	ice crystals forming in the refrigerant	
11	585	B	Very small irregularities on the seat and disk of a globe valve may be manually repaired with the valve in place by the process known as _____.	honing	lapping in	refacing	spotting in	
11	586	B	Diamond point chisels are best used for cutting _____.	oil grooves in bearings	V-grooves and inside sharp angles	holes through metal plate	keyways having square corners	
11	588	D	The bilge system has been performing well; however, the aft starboard engine room bilge-well suddenly fails to be pumped out. Which of the following should be done first to determine the cause?	Open the bilge pump for inspection.	Remove each of the manifold valves.	Remove only the manifold valve to the affected bilge-well.	Attempt to pump out another bilge well to determine if the entire system is affected.	
11	589	D	In ship construction, the hull frame members extending athwart ship are called _____.	deck frames	stringer frames	longitudinal frames	transverse frames	
11	590	B	How can you determine the date that the pressure vessels on your ship will require a hydrostatic test or internal inspection?	Check the boiler equipment list.	Check the pressure vessel block on the Certificate of Inspection.	Check the ABS class certificates.	Check the pressure vessel addenda to the vessel's SOLAS certificate.	
11	591	B	An S-type trap and drain is used _____.	for all lavatory sink installations, as no other drain type is useable	whenever the 'gray' water drain system connection is located in the deck	whenever the 'gray' water drain system connection is located in a bulkhead	as a condensate drain for superheaters	
11	592	B	To properly install a new blade in a hand hacksaw frame, the _____.	teeth should point toward the handle	teeth should point away from the handle	blade should be kept loose in the frame	blade should be 10 inches in length	
11	593	C	If one hydraulic pump of an electro-hydraulic steering unit fails, the vessel's steering can be initially and best maintained by using the _____.	trick wheel	accumulator	standby pump	telemotor	

11	594	B	A sight glass is installed in the liquid line to indicate the condition of the refrigerant charge and may also indicate the _____.	condition of the expansion valve	moisture in the system	condition of the compressor suction valves	condenser temperature	
11	595	C	To accurately cut the proper size gasket for installation in a pipeline, you should use _____.	tin snips	a jack knife	a gasket cutter	a pair of nail clippers	
11	596	A	Which of the figures shown in the illustrations depicts an orthographic projection?	A	B	C	D	GS-0142
11	598	B	If one of the bilge system manifold valves does not properly seat, the _____.	bilge well connected to that valve, plus the second bilge well being pumped will be completely emptied	bilge system will lose vacuum and prevent the other bilges from being pumped out	bilge well aft connected to that valve will siphon its contents to the forward bilge wells	all of the above	
11	599	B	The portion of a mechanism that utilizes manual positioning, or automatic indexing, is known as a detent. An example of a detent used aboard ship can be found in a/an _____.	rheostat	engine order telegraph	valve handwheel	fuel/air ratio control knob	
11	600	A	In certain circumstances, weldments are preheated before each pass to _____.	reduce internal stresses	increase the temperature gradient in the weld area	allow the use of smaller welding rods	eliminate the need for post heating	
11	601	D	The sectional lines drawn within the flange sections, shown in the illustration, indicate the _____.	direction of machine cutting	fitup of flange parts	flange surface finish roughness	type of flange material	GS-0018
11	602	C	The primary function of the device illustrated is to _____.	intensify the pressure developed by an air compressor during its normal running operation	open and close the suction valves during the compressors operation to supply compressed air	remove all but the frictional load of an air compressor at start up	precharge the cylinders of an air compressor prior to the start-up of the unit	GS-0029

11	603	B	Which of the filter/strainer units listed permits you to clean the element while leaving the system on the line?	Simplex	Duplex	Canister	Bypass	
11	604	D	A liquid sight flow indicator in a refrigeration system is examined and gas bubbles are noted in motion with the fluid flow. This means _____.	the system is fully charged	there is air leaking in from the condenser	ice crystals are forming in the refrigerant	the system contains less than a full charge of refrigerant	
11	605	C	A manual process used to remove small irregularities by grinding the contact surfaces together of a valve, is called _____.	spotting-in	honing	lapping-in	refacing	
11	606	C	The thickest deposit of scale in a flash evaporator is most likely to occur in the tubes of the _____.	distillate cooler	first stage condenser	saltwater feed heater	flash chamber	
11	607	A	During the normal operation (air supply 50-100 psi) of the device shown in the illustration, which of the components listed below will be open?	B	D	G	H	GS-0120
11	608	D	When a linear actuator (cylinder) is being retracted without an applied load, the pressure on the oil leaving the 'cap end' will be _____.	zero	inversely proportional to the speed of retraction	inversely proportional to the flow rate at the rod end	increased as the speed of retraction increases	
11	609	D	A recirculating line is provided in the potable hot water system to _____.	maintain uniform inlet conditions for the pressure tanks	maintain flow rates which will eliminate fluid film formation in the piping	return overflow from the pressure tanks back to the potable water tanks	maintain the desired temperature range throughout the system	
11	610	D	Which of the figures illustrated correctly identifies the position the journal will assume in its bearing after it has attained operating speed?	A	B	C	D	GS-0121
11	611	D	For cutting thin tubing or sheet metal, the proper hacksaw blade should have _____.	the teeth pointing towards the handle	the blade and teeth of 'all-hard' quality	14 teeth per inch	32 teeth per inch	
11	612	B	The reading on the vernier caliper scale shown in figure "G" in the illustration is _____.	2.308 inches	2.368 inches	2.380 inches	2.965 inches	GS-0082

11	613	A	The action necessary to use the steering gear room trick wheel when transferring the steering control from the wheelhouse to local control, is to _____.	align the trick wheel to the rudder angle position before engaging	set the six-way control valve in the trick wheel position	open the power transfer switch before engaging the trick wheel	always place the rudder in the midship position to engage the trick wheel	
11	614	D	In an operating refrigeration system low on refrigerant, a liquid line sight glass will _____.	be clear	be blue	be light green	show bubbles	
11	615	B	Why should the use of metallic or semi-metallic packing hooks or pullers be avoided on bronze or brass shafts, rods, plungers, or sleeves?	Heat transfer is restricted.	Scoring may result.	Valve seat will be damaged.	Bonnet corrosion may result.	
11	616	B	Less scale formation occurs in a flash evaporator than in a submerged tube evaporator because _____.	the distillate produced has greater purity	no boiling occurs on heat transfer surfaces	evaporation occurs at a higher rate	the incoming feed is at a higher temperature	
11	617	D	Which of the components listed will be open during the start-up mode (air supply 0-50 psi) of the device shown in the illustration?	B	C	D	E	GS-0120
11	618	D	As a rule of thumb, when pressure is applied to hydraulic oil, the oil will _____.	not be compressed, as liquids are not compressible	reduce in volume by 1% for every 100 psi increment	increase in volume by 1% for every 1,000 psi increment	reduce in volume by 1/2% for every 1,000 psi increment	
11	619	A	The inner bottom of a ship is the _____.	plating forming the engine room tank top	doubler plating installed over the flat keel plate	watertight boundary formed by the skin of the ship	compartment between the tank top and skin of the ship	
11	620	C	When the rotating shaft frequency and the natural vibrating frequency become synchronized at a particular speed, that speed is known as the _____.	synchronous speed	sympathetic speed	critical speed	breakaway speed	
11	621	D	When listed by pitch, which of the hacksaw blades listed would be the most suitable for cutting thin tubing?	14 teeth per inch	18 teeth per inch	24 teeth per inch	32 teeth per inch	

11	622	B	Vessel propellers are classified as being right hand or left hand. A right hand propeller turns clockwise when viewed from _____.	the bow	the stern	the port side	the starboard side	
11	623	B	Flanged joints in hydraulic system piping are commonly made leak proof by _____.	seal welding the mating flange surfaces	installing suitable gaskets or O-rings	leather wipers installed with the flange seals	enclosing the flanged connection in a container	
11	624	B	Which of the listed reasons could cause frost to form on the suction line of a refrigeration compressor?	Shortage of refrigerant in the system.	Expansion valve is stuck open.	Liquid line service valve is closed.	Condenser cooling water temperature is too high.	
11	625	B	To properly remove packing from a valve stuffing box, you should use a _____.	sharpened rod of silver solder	packing puller	chisel and hammer	screw driver	
11	626	A	The primary reason low pressure evaporators produce distillate more efficiently, and with less scale formation, than high pressure evaporators is _____.	evaporation is accomplished in a vacuum	due to the higher temperature of the incoming feed	due to the latent heat of evaporation principle	evaporation in a submerged medium produces more distillate	
11	627	D	The air compressor shown in the illustration uses _____.	twin, horizontal pistons to compress air	two lobes rotating in the same direction to compress air	two lobes rotating in opposite directions, with the air being compressed between the lobes	two lobes rotating in opposite directions, with the air being compressed due to resistance to flow at its outlet	GS-0119
11	629	C	The outer strake of the inner bottom on each side of the ship is called the _____.	rider plate	outer plate	margin plate	stealer plate	
11	631	C	The rubber bladder or separator bag installed in a hydraulic accumulator should only be filled with _____.	pure water	pure oxygen	dry nitrogen	dry hydrogen	
11	632	B	When drilling holes larger than 1/2 inch, a smaller pilot hole should be drilled first to _____.	ensure the maximum cut by the large drill	provide a path for the dead center of the drill	allow the use of a drill with a lesser lip clearance angle	increase the cutting speed of the drill bit	

11	633	C	Which of the following actions will occur with the steering system shown in the illustration when responding to a left rudder command from amidships?	The rudder stock "G" turns counterclockwise.	Only hose "J" will be placed under pressure during this maneuver.	The starboard ram will extend aft.	The six-way valve "N" will be opened.	GS-0137
11	634	C	If the refrigeration compressor crankcase is sweating, the cause may be due to _____.	a shortage of refrigerant	the compressor running continuously	liquid refrigerant returning to the compressor	the compressor short cycling on the high pressure cutout	
11	635	A	Copper coil tubing is best cut with a _____.	tubing cutter	hand hacksaw	pipe cutter	flare cutter	
11	636	C	The illustration shown is called an exploded drawing and is intended to show the _____.	internal shape of all component parts	total number of parts in the assembled component	parts aligned in the correct order of reassembly	disassembled component in a one point perspective view	GS-0025
11	638	C	When normal operating pressure is applied to the hydraulic oil used in a high-pressure system, the oil _____.	viscosity will decrease	volume will increase	volume will decrease	pour point will be reduced	
11	639	B	In a longitudinally framed ship, the longitudinal frames are held in place and supported by athwart ship members called _____.	stringers	web frames	pillars	brackets	
11	641	C	Which of the listed components of a hydraulic system would enable the pump to be temporarily shutdown, and yet still provide an instantaneous source of hydraulic force?	Modulator	Pressure compensator valve	Accumulator	Sump actuator	
11	642	C	To cut angle iron and heavy pipe with a hand hacksaw, you should use a blade with what number of teeth per inch?	14	18	24	32	
11	643	C	The figures shown in the illustration shows two different positions of the same steering gear hydraulic pump. Which of the following statements is correct?	Changing from position I to position II will change the direction of pump rotation.	Position I is changed to position II by the follow-up gear as the desired rudder angle is approached.	Changing from position I to position II will always reverse the direction of fluid flow.	Changing from position I to position II requires a position change of the six-way valve.	GS-0102

11	644	A	If the suction line between the evaporator and compressor is frosting up, the cause may be due to the thermal expansion valve _____.	thermal bulb coming loose from the suction line	needle valve is stuck closed	thermal bulb is in a cold air stream	all of the above	
11	645	C	The tool used to expand and 'bell' the ends of small diameter copper tubing is a/an _____.	adjustable tube roller	adjustable belling tool	flaring tool	tubing expander	
11	646	B	Most solenoid valves are actuated by _____.	a spring	an electromagnet	the force of gravity	refrigerant pressure	
11	647	B	The air compressor shown in the illustration, when used aboard a vessel is typically operated as _____.	an on-off cycle unit	a constant capacity unit	a diesel engine air start unit only	a constant pressure unit while operating under all load conditions	GS-0119
11	648	D	Increased internal leakage, in addition to poor hydraulic system response, and inadequate lubrication, is the result of _____.	pump bearings in poor condition	excessively worn actuator-piston packing	broken directional control valve centering springs	low hydraulic oil viscosity	
11	649	C	The structural members of the hull extending in a fore and aft direction are called _____.	frames	joiners	longitudinals	knees	
11	650	D	The minimum number of crew members permitted by law to operate your vessel can be determined by checking the _____.	Muster List ("Station Bill")	A. B. S. Certificate	Master's crew list	Certificate of Inspection	
11	653	C	When there is no movement of the rams on an electro-hydraulic steering gear, the tilting box of the running pump is _____.	set for maximum torque	on the purge and vent stroke	in the neutral position	rotating backwards	
11	654	D	If a refrigeration compressor crankcase is sweating, the trouble could be caused by _____.	excessive superheat	a minor amount of air in the system	normal oil circulation with the refrigerant	the expansion valve being stuck in the open position	
11	655	B	Prussian blue is used to _____.	check heat exchangers for leaks in the waterside	check the fit of a seat and disc of a valve	check for leaks in a R-12 system if a Halide torch is not available	trace condensate flow in an impulse steam trap	
11	656	B	The best hacksaw blade to use for cutting brass is the _____.	flexible blade	all-hard blade	all-soft blade	hollow core blade	

11	657	C	The initial start-up of the device shown in the illustration is accomplished by _____.	temporarily discharging the compressed air to the atmosphere	holding open the high pressure stage reed-type suction valves	discharging the compressed air to the receiver with the minimum pressure valve (S) closed	the use of an intercooler relief device	GS-0119
11	658	D	Which characteristic or condition will have the greatest effect on increasing a hydraulic oil's viscosity?	Pour point	Cloud point	Vacuum	Pressure	
11	659	C	In merchant ship construction, the term 'scantlings' refers to the _____.	factor of safety involved with the hog and sag characteristics of the hull	hull girder strength in terms of the standard model	designed size of the beams, stiffeners, and shell plating	ICE strength classification of the hull	
11	660	C	Before boring a blind tapered hole, a good shop practice to follow is to _____.	use a tapered reamer	drill to the large diameter of the taper	drill to the small diameter of the taper	bore a straight hole	
11	662	B	When coming to the end of a cut using a hand hacksaw, you should _____.	stop applying the cutting fluid	reduce cutting speed and pressure	change to a finer cut blade	increase cutting speed and pressure	
11	663	D	Rotation of the steering wheel on the navigation bridge initiates oil pressure being applied to the steering gear rams by _____.	regulating the oil flow with the six-way valve	moving the automatic differential valve	moving the follow up indicator which regulates the six-way valve	varying the angle of a tilting box or eccentricity of a floating ring	
11	664	B	Frosting or sweating of the suction line of a reciprocating refrigeration compressor indicates a condition which could result in severe damage due to _____.	minor amounts of oil in the refrigerant	liquid slugging	insufficient refrigerant	a failed heat interchanger	
11	665	B	A knocking sound from one cylinder of an operating air compressor indicates _____.	a defective or broken high pressure unloader	a loose valve plate	excessive overload	no compression	
11	666	B	In order to take suction on the lube oil drain tank cofferdam with the bilge pump shown in the illustration, how many suction side valves must be open?	One	Two	Three	Four	GS-0042

11	668	B	Sluggish response or action of the hydraulic actuators may be a result of _____.	insufficient load	excessively high oil viscosity	relief-valve pressure setting too high	reservoir level being maintained two inches above normal	
11	669	D	The shaft coupling for the illustrated pump is rotated by the motor coupling using a/an _____.	wire serpentine grid	interlocking flexible claws	internal gear ring	special bolts and flexible rubber inserts	GS-0143
11	670	C	The valve labeled 'V-4', for the illustrated device, is the _____.	pump suction valve	oily water inlet valve	processed water discharge valve	oil drain control valve	GS-0113
11	671	D	The purpose of an accumulator in a hydraulic system is to _____.	collect any dirt in the system	collect fluid from any small leak	preheat the fluid during cold weather	store potential energy in the form of hydraulic fluid under pressure in the system	
11	672	D	A swing check valve is used in a pipeline to _____.	maintain a preset pressure on the line	closely regulate the amount of flow	relieve excessive pressure on the line	allow flow in one direction only	
11	673	D	When the desired rudder angle is attained by a typical double ram electro-hydraulic steering gear, the _____.	ram relief valves bypass oil to stop rudder movement	six-way valve shifts to the neutral flow position	steering pump electric motor is de-energized by the transfer switch	follow-up gear takes the hydraulic pump off stroke	
11	674	C	A refrigeration system compressor crankcase is sweating or unusually cold. This is an indication of _____.	a shortage of refrigerant in the system	air in the system	an accumulation of liquid refrigerant in the crankcase.	a shortage of oil in the crankcase	
11	675	D	A hacksaw blade will start a cut more easily if you _____.	apply maximum pressure at the start of the cut	coat the saw blade with soap before starting the cut	turn the saw blade at right angles to the saw frame	file a nick where the cut is to be started	
11	676	D	Operating a rotary pump at speeds in excess of design requirements could cause _____.	decreased clearances between rotating parts	decreased slippage to the suction side of the pump	air binding in the discharge ports	erosion and excessive wear	

11	677	B	One of the functions of the component labeled "E", shown in the illustration, is to _____.	act solely as a heat exchanger	act as a lube oil sump	provide storage for compressed cryogenic gases	act as a cyclonic pneumatic dehydrator	GS-0119
11	678	A	A solenoid, direct-acting, three-position, spring-centered, directional control valve is used in a hydraulic system to control a linear actuator. Midway through extension, the push button is released, but the actuator continues to extend slowly. Which of the following conditions represents the probable cause?	A centering spring has broken and jammed the spool movement preventing the spool from recentering.	One of the two solenoids has sustained an open in its respective coil.	The pump coupling has been damaged preventing the pump from developing its required operating speed.	The detent mechanism has failed, preventing the valve from operating.	
11	679	A	In ship construction, structural hull members installed athwart ship are _____.	deck beams	stringers	girders	breasthooks	
11	680	C	In accordance with the Coast Guard Regulations (46 CFR), which of the following situations requires an official logbook entry and is considered the responsibility of the chief engineer?	Ensuring that the emergency lighting and power systems are operated and inspected at least once in each week the vessel is navigated.	Seeing that all lifeboat winch control apparatus including motor controllers, limit switches, etc. are examined at least once in each 3 months.	Obtaining a sample of all fuel oil received on board to be used as fuel along with ascertaining all particulars such as vendor, producer, flash point, etc.	All of the above.	
11	681	B	If a matching nut and bolt have a 'Class 4' or 'No. 4' fit, they will _____.	be loose and only suitable for rough construction work	be difficult to turn by hand but easy to turn with a wrench	require less torque than specifications call for	require a hydraulic torque wrench to obtain the specified torque	
11	682	B	The illustrated valve is known as a _____.	lift gate valve	swing check valve	swing globe valve	butterfly lift valve	GS-0056

11	683	C	When the helm demands a 20° right rudder movement from an electro-hydraulic steering gear, which of the listed actions will be the FIRST action to happen when this rudder position is attained?	The six-way valve opens.	The steering service pump motor is stopped.	The follow-up gear takes the pump off stroke.	The cylinder relief valves bypass oil to the suction side of the pump.	
11	684	B	Refrigeration system compressor crankcase sweating is an indication of _____.	insufficient lube oil circulating through the system	excessive circulation of lube oil through the system	insufficient refrigerant in the system	an overworked compressor	
11	685	D	Which of the following is/are true concerning the pump shown in the illustration?	For classification purposes the pump would be termed end suction.	The impeller wearing ring would be identified by piece #8.	The casing is of a double volute design.	All of the above.	GS-0143
11	687	A	The device shown in the illustration is lubricated by _____.	air pressure forcing lube oil to areas of friction	a small spur gear pump	splash-type lubrication provided in the compressor	gravity feed provided by component "A"	GS-0119
11	688	D	A solenoid direct-acting three-position spring-centered directional control valve is used in a hydraulic system to control a linear actuator. When the remote push button is depressed to extend the actuator it fails to move, even though the pump is in operation. Which of the following statements represents the cause?	A spring at one spool end has broken and jammed, preventing the spool from shifting.	The 'extend' solenoid coil has developed an open.	The pump coupling is damaged and pump is unable to turn at its required speed.	Any one of the above will cause the actuator to not move.	
11	689	C	A vertical shaft having a rudder attached to its lower end and having a yoke, quadrant, or tiller fitted to its upper portion by which it may be turned, is the _____.	rudder frame	rudder post	rudder stock	stern post	
11	690	D	Which bearing will carry the load on two small points diametrically opposite to each other?	Needle	Tapered roller	Roller	Ball	
11	691	B	The notation '10-24 tap' appears on a drawing. The number "24" indicates the _____.	number of holes involved	number of threads per inch	size of hole	tightness of fit	

11	693	A	To charge a bladder type hydraulic accumulator _____.	remove all hydraulic system pressure and bring the pneumatic pressure to the accumulator preload pressure	remove all hydraulic system pressure and bring the pneumatic pressure to the system's design pressure	increase the pneumatic pressure until the hydraulic system reaches its design pressure	allow the accumulator to completely fill with gas charge at atmospheric pressure, shut off the air chamber, and add hydraulic fluid until proper pressure is reached	
11	694	D	Sweating of the refrigeration system compressor crankcase is caused by _____.	too much superheat	insufficient superheat	suction pressure too low	excessive refrigerant returning to the compressor	
11	695	C	The pump shown in the illustration is a _____.	piston pump	diaphragm pump	centrifugal pump	reciprocating pump with piston valve gear	GS-0012
11	696	B	An increase in rotor clearances in a rotary pump will _____.	increase discharge pressure	decrease pump capacity	decrease pump cavitation	decrease reaction ring clearance	
11	697	B	Lubricating oil is added to the device shown in the illustration by using the component labeled '_____.'	D	F	M	R	GS-0119
11	698	B	Air entrained in the hydraulic fluid, or trapped in an actuator will cause the actuators to move with a jerky motion. This action is a result of _____.	the trapped air being compressed to a pressure above the maximum pump discharge pressure, then re-expanding and lowering in pressure after the actuator moves	the trapped air being compressed to operating system pressure, then dropping in pressure as the actuator moves, allowing the air to re-expand, then repeating the process	air being capable of moving loads more effectively than a liquid	air providing better lubrication of internal components, found in Hydraulic Systems, than hydraulic fluids	

11	699	A	A temporary Certificate of Inspection, Form CG-854, may be issued to a self propelled cargo vessel _____.	when the immediate issuance of a Certificate of Inspection is not possible at the completion of an inspection	until all minor deficiencies (CG-835's) found by the CG inspector during a biannual inspection are corrected, at which time a regular certificate may be issued	to cover an expired permanent Certificate of Inspection provided that the certificate did not expire within 15 days after the vessel left the last port of the U. S.	under all of the above situations	
11	700	A	The mutual action between parts of a material to preserve their relative positions when external loads are applied to the material, which tends to resist deformation when subjected to external forces, is known as _____.	stress	strain	shear strength	ultimate tensile strength	
11	701	C	The needle valve (piece #3) shown in the illustration, is held in the test valve body (piece #2) by a _____.	press fit	spring loaded clamp	machine screw thread	fillet weld	GS-0020
11	703	B	In an electro-hydraulic steering system, rudder movement is maintained in close synchronization with the steering wheel position by means of the _____.	trickwheel	follow-up control	six-way valve	Rapson slide	
11	704	C	Crankcase sweating in a refrigeration system is caused by _____.	a stuck solenoid valve	a shortage of refrigerant	too much oil in circulation	too much superheat	
11	705	D	The letters 'NC' in '1/4-20 NC' indicates the bolt is _____.	made of nickel cadmium metal	made of noncorrosive metal	not clad with any coating	threaded with national coarse threads	
11	706	B	The pump shown in the illustration can best be described as a centrifugal _____.	multistage pump with a single suction closed impeller	single stage pump with a single suction closed impeller	single stage pump with a double suction closed impeller	single stage pump with a single suction open impeller	GS-0012

11	707	C	The device shown in the illustration is used to _____.	pump cargo oil or bilges	circulate refrigerant through the ships service refrigeration system	compress air	separate large quantities of oil-water emulsions	GS-0119
11	708	A	Air trapped in one end of a hydraulic actuator may be indicated by _____.	erratic or jerky motion of the actuator	a pump discharge pressure that is consistent, but higher than normal	consistently faster response or movement of the actuator	over speeding of the pump	
11	709	D	Which of the following statements is true concerning the instrumentation or alarms provided at the main control station for an automated main propulsion plant?	Nonvital alarms are separated from vital alarms.	Provisions are made through simulation or actual condition for testing all audible and visual alarms and indicating lights.	All alarm circuits should be in operation when the system is on the line.	All of the above.	
11	710	D	A chief engineer's responsibilities include making logbook entries whenever fuel oil is received. In accordance with Coast Guard Regulations (46 CFR), this log entry must include the _____.	name of the vendor	name of the oil producer	flash point (closed cup method) of the fuel oil certified by the producer	all of the above	
11	711	A	Figure "B", shown in the illustration, is dimensioned to indicate a/an _____.	interference fit	clearance of .005 inch	running fit	tolerance of .005 inch	GS-0019
11	712	B	Prussian blue is used for _____.	grinding in valves	spotting in valves	lapping valves	refacing valves	
11	713	A	A precharged bladder-type accumulator used in a hydraulic system, can be potentially dangerous if _____.	the charging valve stem breaks while at normal working pressure	the inert gas is exposed to hydraulic oil	the bladder contacts the top of the poppet	it is precharged with dry nitrogen	
11	714	B	If a refrigeration system compressor crankcase is sweating, you should _____.	add refrigerant to the system	adjust the thermal expansion valve to the proper setting	adjust the float valve to the proper holding pressure	open the hand expansion valve	

11	715	C	A P-type trap and drain is used _____.	for all lavatory sink installations, as no other drain type is useable	whenever the 'gray' water drain system connection is located in the deck	whenever the 'gray' water drain system connection is located in a bulkhead	as a condensate drain for superheaters	
11	716	B	Which of the following descriptions identifies the centrifugal pump shown in the illustration?	Single inlet and dual direction of rotation	Single inlet and one direction of rotation	Double inlet and dual direction of rotation	Double inlet and one direction of rotation	GS-0130
11	717	D	Which of the following statements regarding low pressure, reciprocating, air compressor valves is correct?	A relatively large clearance space is required for the valves.	Mechanical operating valve gear is required to open and close the valves.	Only the suction valve requires a push rod and rocker arm mechanism for valve operation.	Due to the physical construction of the valves, a relatively small cylinder clearance space is required.	
11	718	B	When new piping sections have been fabricated for installation in a hydraulic system, prior to installation the piping should be _____.	cleaned using a water-based detergent	descaled by using a pickling solution	hydrostatically tested to 100% of maximum working pressure	all of the above	
11	719	D	A cofferdam is a/an _____.	empty space between tank tops and bilges	cement baffle in a fresh water tank	tank for storing chemicals	empty space separating compartments to prevent the contents of one compartment from entering another in case of leakage	
11	720	B	If the drill point lips are ground at different angles, the drill will _____.	overheat rapidly from rubbing	cut an oversized hole	cut a continuous chip	jam in the hole and break	
11	721	B	Proper hacksaw cutting is accomplished when pressure is applied only on the _____.	backward stroke	forward stroke	front of the hacksaw frame	top of the hacksaw frame	

11	722	A	In order for the vessel to discharge its cargo to a shore facility from #6 centerline tank, with the #7 main deck manifold valve open, which of the listed valve combinations, shown in the illustration, must be opened and which of the valves must be closed?	1, 2, 4 and 9 open 3, 5, 6, 8 and 10 closed	1, 4, and 10 open 2 closed	1, 2, 5 and 6 open 3 and 4 closed	All valves are open to gravitate	GS-0139
11	723	B	Before performing any maintenance on a hydraulic system storing energy in an accumulator, you should _____.	pressurize the system to test for leaks	bleed off all pressure within the system	operate the machine until it reaches normal temperature	disconnect the pump pressure control switch	
11	724	B	Liquid line gas may cause erosion of the expansion valve's internal components and could cause the valve to _____.	overheat	hunt	freeze shut	freeze open	
11	725	A	The term '5/16-24' describes _____.	machine bolt size and threads per inch	steel plate gauge size and thickness	bearing puller size	cutting torch tip size	
11	726	A	A multistage centrifugal pump can be BEST described as having _____.	two or more impellers housed together in one casing and mounted on a single shaft	a single stepped impeller mounted in a progressively staged casing	a large radial clearance between the impeller and casing to prevent overheating due to friction	an increase in the discharge velocity of the liquid with a corresponding decrease in pressure through the stages	
11	727	A	The major difference between the discharge and suction valves installed in most low pressure, reciprocating air compressors is that _____.	one valve seats upwards, while the other seats downwards	the reed valves used on the discharge are made substantially thicker and heavier than the suction valves	the suction valve springs exert a greater tension than the discharge valve springs	the discharge valve springs exert a greater tension than the suction valve springs	

11	728	B	If you attempt to tighten a leaking hydraulic fitting with pressure on the system, you will _____.	be successful every time	find that the pressure will prevent the components from being tightened	cause the system to vibrate	dislodge any scale in the tubing, and it will damage the system	
11	729	A	The annual reinspection of a tank vessel, holding a two year Certificate of Inspection endorsed, 'Inspected and Approved for the Carriage of Flammable or Combustible Liquids of Grade A', must _____.	where possible, be made between the tenth and fourteenth month of the period for which the certificate is valid	be preceded by written application by the master, owner, or agent of the vessel	be undertaken only when all cargo tanks are empty, gas free, and made accessible for internal examination	all of the above	
11	730	A	Propeller pitch speed minus ship speed divided by the propeller pitch speed is termed _____.	apparent slip	true slip	pitch	propulsive efficiency	
11	731	C	As sometimes utilized with centrifugal pumps operating with a high suction lift, foot valves are primarily designed to _____.	give the pump motor, or driver, positive protection when operating in a shutoff condition	provide a means of supplying sealing fluid for the impeller shaft stuffing box	enable the pump and its suction line to remain primed prior to starting the pump	afford the pumping system protection against water hammer and surging	
11	732	C	Salt water ballast is to be discharged into the #6 port and starboard wing tanks. Which combination of valves, illustrated, must be opened, and which valves should be closed?	3, 4, 7 and 9 open; 1, 2, 5, 6 and 10 closed.	1, 2, 7 and 9 open; 3, 4, 5, 6, 8 and 10 closed.	1, 3, 5, 6, 8 and 10 open; 2, 4, 7 and 9 closed.	1, 2, 5 and 6 open; 4, 7, 8 and 9 closed.	GS-0139
11	733	A	Which of the devices listed, when used on an electro-hydraulic steering gear, keeps the movement of the rudder closely in step with the steering wheel?	The follow-up gear	The rudder angle indicator	The synchronous electric transmitter	A rudder angle limit switch	
11	734	A	The sensible heat of air is dependent upon the _____.	dry bulb temperature	wet bulb temperature	saturation temperature	water vapor superheat	

11	735	D	What should be done if localized scoring is discovered on a pump shaft sleeve during routine maintenance inspection?	Reassemble the pump and provide more water leak off for lubrication.	Check for parallel alignment of the sleeve radial face to the sleeve bore.	Reassemble the pump and set the governor to obtain a slower speed.	Correct the cause of scoring and install a new shaft sleeve.	
11	736	D	The designation '1/4-20' describes _____.	cutting torch tips size	pipe thread die size	steel plate thickness	machine bolt size and threads per inch	
11	737	D	Which of the following statements represents the path of air flow passing through a typical two stage, low pressure, reciprocating, air compressor?	Intercooler, L.P. cylinder, H.P. cylinder, and air cleaner	L.P. cylinder, air cleaner, intercooler, and H.P. cylinder	Air cleaner, L.P. cylinder, H.P. cylinder, and intercooler	Air cleaner, L.P. cylinder, intercooler, and H.P. cylinder	
11	738	D	A flare-type tubing connector is used in the hydraulic hatch-cover system and has developed a slight leak. To stop the leak you should _____.	keep the system in operation and tighten the flare nut	replace both the tubing sections and the fitting	stop the system and use only one wrench to tighten the flare nut	shut down the power unit and use two wrenches to avoid damaging the tubing when tightening	
11	739	C	A lightening hole, shown in the illustration, is identified by the letter '____.'	A	H	J	all of the above	GS-0086
11	740	A	In accordance with Coast Guard Regulations (46 CFR), the hailing port marked on the stern of a vessel indicates _____.	the port where the vessel is permanently documented	the place in the same marine inspection zone where the vessel was built	where one or more of the owners reside	all of the above	
11	741	C	Differential pistons used in some reciprocating air compressors, serve to provide _____.	a means of distributing side pressures over a wider area of each cylinder	a means of unloading during start-up	more than one stage of compression by each piston	a variable compression ratio enabling the output to be varied to suit any load condition	

11	742	B	It is necessary to discharge salt water ballast into the #6 centerline tank. Which combination of listed valves illustrated, must be opened and which valves must be closed?	2, 3, 5 and 6 open; 4, 7, 8, and 9 closed	1, 3, 5, 6 and 9 open; 2, 4, 7, 8, and 10 closed	4, 7, 8 and 9 open; 3, 5, 6 and 10 closed	2, 5, 6 and 9 open; 1, 3, 6 and 10 closed	GS-0139
11	743	B	Before doing any work on a hydraulic system equipped with accumulators, you should _____.	drain the accumulators and purge with oxygen	bleed off all stored energy from the accumulators	completely charge the accumulators to prevent system energy loss	pump the hydraulic fluid into the accumulators to prevent fluid loss	
11	744	D	Which of the problems listed could cause erosion of the expansion valve disks and seats?	Overcharging the system with refrigerant	Faulty compressor suction valve	Failure of the high pressure cutout	Flash gas formed in the liquid line	
11	745	D	A pump shaft that is bent or distorted should normally be _____.	repaired by a suitable welding process	straightened by applying heat and torsion	reconditioned by metallizing and machining	replaced with a satisfactory spare	
11	746	C	The quantity and density of brine discharged from the last effect of a flash type evaporator should be kept at a constant value so as to _____.	prevent scale accumulation in the first effect heat exchanger surfaces	maintain a constant distillate outlet temperature	ensure distillate quality and distilling plant efficiency	prevent any salinity in the distillate produced	
11	747	C	If an air compressor is used to supply compressed air to outlets throughout the engine room and on deck of a vessel, the system is known as the _____.	combustion control air system	supply air system	ship's service air system	low pressure deck air system	
11	748	D	If the hydraulic compression type tubing fitting, shown as figure "C" in the illustration begins to leak, you should _____.	apply more thread seal and retighten part 'IV'	apply thread seal tape around the threads between part "II" and 'IV', then reassemble and tighten	replace part "III"	replace part "I"	GS-0100

11	749	D	An international and coastwise load line assignment and certificate has been issued to a vessel by the American Bureau of Shipping, under the authority of Coast Guard Regulations (46 CFR), for a period of _____.	1 year	2 years	4 years	5 years	
11	750	C	When it is necessary to repair a refrigeration system using R-134A and the system will be open for more than a few minutes, the open ends of the system should be _____.	dehydrated	purged	plugged	evacuated	
11	751	C	The 'pitch' of a screw is the _____.	angle formed by adjacent flanks of a thread	number of threads divided by the length of the threaded portion of the screw	distance between corresponding points on adjacent threads	angle of taper formed by the centerline of the screw and the crests of the thread	
11	752	B	The use of a needle valve in a piping system is recommended when requiring _____.	high pressure drops	close regulation of flow	no pressure drops	no back flow	
11	753	B	The hydraulic tubing installation shown as figure "D" is INCORRECT and will probably leak when in operation because the tubing _____.	will contract in diameter and expand in length under pressure	and its fittings cannot be properly installed and tightened	will stretch and overstress the male threads on the fitting	cannot flex at right angles to the pressure applied by the fluid because it is not properly twisted	GS-0065
11	754	C	A constant hissing sound at the thermal expansion valve will always indicates _____.	proper refrigerant control	a faulty refrigerant control valve	a lack of refrigerant	the flow of 100% liquid refrigerant passing to the evaporator	
11	756	C	In a two stage flash type evaporator, the brine overboard pump is vented directly to the _____.	saltwater heater shell	first stage distilling condenser	second stage flash chamber	air ejector condenser	

11	757	A	If an air compressor is used to supply air primarily to the combustion control system and other pneumatic controllers, the entire system is known as the _____.	control air system	forced draft air system	supply air system	ships service air system	
11	758	A	The component of the illustrated compression fitting, figure "C", used to seal and eliminate leaks between the tubing and the fitting, is part _____.	I	II	III	IV	GS-0100
11	759	C	A shot of anchor chain has a length of _____.	6 fathoms	12 fathoms	15 fathoms	45 fathoms	
11	760	B	Air entrained in the hydraulic fluid, or trapped in an actuator will cause the actuators to move with a jerky motion. This action is a result of _____.	the trapped air being compressed to a pressure above the maximum pump discharge pressure, then re-expanding and lowering in pressure after the actuator moves	the cyclic expansion and contraction of air due to the motion of the actuator	air being capable of moving loads more effectively than a liquid	air providing better lubrication of internal components, found in Hydraulic Systems, than hydraulic fluids	
11	761	D	Cylinder inlet valve failure in a low pressure air compressor can be caused by _____.	carbon buildup on the pistons from excessive lubrication	compressor overspeeding due to mechanical failure in the unloader	valve pounding due to valve covers being excessively tight	sticking valves due to carbon buildup on the seats	
11	762	A	When replacing packing rings in the stuffing boxes of reciprocating pump piston rods, the ends of the rings should be cut _____.	square	beveled	step-designed	diagonal	
11	763	C	Hydraulic system tubing should be anchored every three or four feet to prevent _____.	excessive pump cavitation	expansion and contraction of the tubing	tube fitting leaks from vibration and pressure surges	tube flexing at right angles to the applied fluid pressure	
11	764	D	A cracked diaphragm in a thermostatic expansion valve will cause the valve to _____.	return to a neutral position	flood the evaporator	open	close	

11	765	B	In order to distribute the side pressures over a wide area of the cylinder walls and liners, which of the listed types of pistons are used in modern low pressure air compressors?	Differential	Trunk	Barrel	Valve-in-head	
11	767	D	Which of the listed operating conditions would have the greatest effect on the volumetric efficiency of an operating reciprocating air compressor?	The density of the air entering the compressor.	The temperature of the air entering the compressor	The designed rotating speed of the compressor.	A leaking head gasket.	
11	768	C	The components used to 'lock' the hydraulic tubing in place when assembling the illustrated compression fitting "C" are items _____.	I and III	I and II	II and III	III and IV	GS-0100
11	769	C	Which of the listed systems related to an engineer's signal alarm panel is required to be indicated by a continuously illuminated light while in operation?	Deaerating tank low level	Shaft alley bilge high level	Port or starboard steering gear motor running	No. 1 diesel generator low lube oil pressure	
11	770	B	Which of the following is the minimum internal diameter of the main bilge suction piping permitted by Coast Guard Regulations (46 CFR Part 56) on a vessel over 150 gross tons?	1 1/2 inches.	2 1/2 inches.	3 1/2 inches.	4 1/2 inches.	
11	771	C	Broken valve strips in an operating low pressure, air compressor will cause _____.	an immediate crankcase explosion	oil contamination in the compressed air	a decrease in compressor capacity	no immediate loss of the compressed air capacity	
11	772	D	During the inspection of a low pressure pump, the wearing ring is determined to have a clearance of 0.011" - 0.013", you should _____.	replace the worn wearing ring	install a new oversized casing ring	machine the worn wearing ring and refit	leave the existing wearing rings in place	
11	773	D	Which of the listed illustrations shows the INCORRECT method for installing hydraulic tubing?	A	B	C	D	GS-0065
11	774	B	Which of the problems listed represents the major difficulty encountered with thermal expansion valve operation?	Lube oil passing through the system.	Moisture or foreign matter collecting at the valve seat and orifice.	Variable spring tension caused by the changing temperature.	Frost on the liquid line.	

11	775	C	What basic dimensions are used in describing machine bolts?	Diameter and length only	Diameter and cross section only	Diameter, length, and number of threads per inch	Diameter, head size, and shoulder length	
11	776	C	The impeller shown in the illustration is best described as a/an _____.	axial flow impeller	semi-open impeller	single suction closed impeller	double suction mixed flow closed impeller	GS-0012
11	777	B	A viscous film of oil collected between the valve face and seat of a low pressure reciprocating air compressor will _____.	prevent the valve from wire drawing	retard the opening and closing of the valve	have no effect on compressor operation	provide quieter valve operation	
11	778	B	Of the hydraulic tubing fittings illustrated, the flared fitting for high pressure use is represented by figure _____.	A or C	A or B	B or C	C or D	GS-0100
11	779	D	Short cycling of the potable water system's pump is prevented by using _____.	constant speed supply pumps	variable speed supply pumps	variable delivery supply pumps	a hydropneumatic pressure tank	
11	780	B	If the pump for a hydraulic anchor windlass is over heating, the cause may be _____.	increased pump speed	excessive pump discharge pressure	too low of a tilting box angle	low pump speed	
11	782	D	Compared to poppet and other mechanically operated valves, which of the following advantages is gained by using a thin plate (feather) low lift type valve in an low pressure air compressor?	They improve compression efficiency.	They operate with a minimum of noise.	They are simple and easy to replace.	All of the above.	
11	783	A	According to Coast Guard Regulations (46 CFR), where cargo pump shafts on tankers pierce bulkheads _____.	readily accessible gastight glands shall be provided	compressed air shall be used as the primary means to discharge cargo	a pressure gauge or manometer shall be installed on the bulkhead to ensure the gastight seal is maintained	the glands are to be kept under continuous suction with power ventilation	
11	784	C	If a refrigeration compressor were short cycling on the low pressure cutout switch, the probable cause for this might be the _____.	system was overcharged with refrigerant	high pressure switch was improperly adjusted	expansion valve strainers were fouled	suction valves were leaking slightly	
11	785	D	Machine bolts are identified by their _____.	type of head	major diameter and length	threads per inch	all of the above	

11	786	B	A metal file has become clogged with filings and should be cleaned with a file _____.	scraper	card	oilstone	dressing tool	
11	787	B	The function of the springs used with channel or plate-type valves for reciprocating air compressors is to _____.	open the valves during downward strokes	provide positive closing of the valves	reduce compressor discharge pulsations	reduce air intake and exhaust pulsations	
11	788	A	If a hydraulic system is in continuous operation, and is equipped with an air cooled heat exchanger, the fan should _____.	be in continuous operation as long as the main pump prime mover is in operation	come on only after the main pump prime mover is secured	be controlled by a thermostat to maintain the oil temperature at less than 190°F (87.8°C)	never be needed, except when the ambient temperature exceeds 90°F (32.2°C)	
11	789	B	Where should you expect to find striking plates?	In the bow of the ship at the waterline.	On the bottom of a fuel or ballast tank under the sounding tube.	Under the counter above the propeller blade tips.	On the cofferdam manhole.	
11	790	C	The part of the anchor windlass that engages the anchor chain for lifting is called the _____.	warping head	fairlead	wildcat	capstan	
11	791	A	Air blowing from the intake air filter of an operating air compressor indicates _____.	broken inlet valves	broken discharge valves	pulsations in the air distribution system	overloading of the air distribution system	
11	792	C	Which of the listed valve types is typically used as inlet and discharge valves on modern low pressure air compressors?	Poppet	Rotary	Reed	Sliding	
11	793	A	When any low pressure distilling plant is operated with less than the designed vacuum, the _____.	heat level rises	heat level drops	capacity increases	scale formation decreases	
11	794	B	If a refrigeration crankcase compressor were short cycling on the low pressure cutout switch, the cause might be that the _____.	system was overcharged with refrigerant	system was low on refrigerant	suction valves were leaking slightly	relief valve was leaking slightly	
11	795	D	Heavy pressure on the ends of a file will cause the work surface to become _____.	tapered	smooth	rough	rounded	

11	796	D	Which of the valves listed will be cycled from fully open to fully closed when the handle is turned 90°?	A rising stem gate valve	A globe stop valve	A check valve	A butterfly valve	
11	797	B	Which of the following problems would be the probable cause for the faulty operation of a reciprocating air compressor suction valve?	Carbon build up in the piston ring belt.	Faulty operation of a cylinder unloader.	Compressor operation in an area of high relative humidity.	Lifting of intercooler relief valve.	
11	798	A	In which of the listed hydraulic systems will the installation of an oil cooler be necessary?	Constant tension mooring winch system	Hatch cover system	Watertight door system	Internal combustion engine hydraulic starter system	
11	800	B	While riding at anchor, the anchor chain should be secured by the _____.	windlass brake only	chain stopper or riding pawl	riding spindle	anchor shackle	
11	801	C	In the illustration shown, an efficient seal is maintained between the suction cover and the volute by _____.	good metal-to-metal contact	sealant between the two parts	an asbestos gasket	compressing the packing rings	GS-0012
11	802	B	Which of the following problems could cause air to blow out through the inlet air filter of a running compressor?	Excessive compression in the cylinder	A broken intake valve	A dirty inlet filter element	An improperly adjusted discharge valve	
11	803	D	The striped flexible hose installation shown is incorrect and will probably fail under pressure because the hose will _____.	expand under pressure and split along the axis of the stripe	flex and rupture at the twist indicated by the stripe	expand in diameter and rupture in the twisted area	pull out of the fittings as the hose contracts in length	GS-0064
11	804	C	A refrigeration unit will tend to short cycle when operating _____.	under heavy loads	during hot gas defrost	under light loads	during starting conditions	
11	805	C	A vacuum is initially created in a flash type distilling plant by _____.	the flashing of the feed water	the condensation of the saltwater feed	air ejectors, eductors, or a separate vacuum pump	condensation of the distillate	
11	806	B	Most pump manufacturers recommend that the discharge piping for centrifugal pumps be one size larger than the pump discharge nozzle to _____.	reduce the pump discharge pressure	reduce the frictional losses due to fluid flow	increase the pump discharge pressure	allow rapid venting of entrained air	

11	807	B	On a medium pressure, differential piston, reciprocating air compressor, lubrication of the upper pistons/cylinders is usually accomplished _____.	by the splash method	with metering type cylinder lubricators	gravity fed lubricators	lube oil flow from the bearing lube oil system	
11	808	D	If the steam flow entering the evaporator steam supply orifice has a quality of 95%, which of the following statements would be true?	The steam at the outlet would obtain a higher degree of desuperheat.	The steam at the outlet would be at a higher superheat than when it is supplied at 100% quality.	The steam would obtain a lower absolute pressure than when it is supplied at a quality of 100%.	The entrained moisture will become a totally saturated vapor prior to any superheat being acquired by the steam.	
11	809	A	What color is used to indicate the last shot of anchor chain?	Red	White	Blue	Yellow	
11	810	C	The principal purpose of an anchor windlass chain stopper is to _____.	tie off the warping head lines	absorb the brake thrust of the anchor windlass	hold the anchor chain while riding at anchor	lock the intermediate clutch shaft to the wildcat	
11	812	D	Which of the following problems can result in below normal pressure in the intercooler of an operating low pressure air compressor?	Defective pressure pilot valve	Defective receiver relief valve	Leaking intake valves on the high pressure cylinder	Leaking discharge valves on the low pressure cylinder	
11	813	A	If the supplied steam pressure to the first effect of a submerged tube distilling plant is allowed to fluctuate, the distiller _____.	solenoid dump valve will trip	air ejector will operate erratically	water levels will automatically lower	brine density will increase	
11	814	B	If a refrigeration compressor is short cycling on high head pressure, you should _____.	purge the condenser if the waterside is dirty	check for proper water flow through the condenser	increase the high pressure cutout setting	reduce the cooling water flow	
11	815	A	Which of the listed tools should be used to remove a tapered roller bearing from a shaft?	An arbor press	A steel drift pin and hammer	An acetylene torch and hammer	A tapered 'come-a-long'	
11	816	A	Most pump manufacturers recommended that the discharge piping for centrifugal pumps be _____.	one size larger than the pump discharge nozzle	the same size as the pump discharge nozzle	one size smaller than the pump discharge nozzle	installed with a short radius elbow at the pump	

11	817	B	If all of the air charge has been lost from a ship service air receiver, the compressor mechanical unloading system will _____.	fail to work, and the drive motor will trip the circuit breaker as the compressor will be overloaded	fail to function as designed, but the compressor having no load will start with little or no difficulty	still function normally at start-up	Still function normally, but the safety interlock will stop the drive motor	
11	818	A	If the fixed orifice in the evaporator steam supply line were to be removed, the steam pressure reducing valve located upstream would _____.	be unable to maintain steam flow unless the proper range spring were to be installed	be suitable for maintaining the required steam flow under all load conditions	handle the operation satisfactorily as the control orifice develops an impedance to the steam flow	all of the above	
11	819	D	Every automated machinery plant must have an 'engineer's assistance' alarm. Power for this alarm should be taken from the _____.	main bus	emergency bus	standby generator	general alarm power supply	
11	820	C	The reading indicated on a vernier micrometer caliper scale is .3101 inches. Which of the figure in the illustration represents this reading?	Figure C	Figure D	Figure E	Figure G	GS-0083
11	821	C	How many cap screws are used to secure the motor bracket to the volute shown in the illustration?	One	Three	Four	Cannot be determined from the information given	GS-0012
11	822	A	Excessively low air pressure occurring in the intercooler of a reciprocating air compressor is caused by _____.	leaky discharge valves on the LP cylinder	leaky discharge valves on the HP cylinder	insufficient intercooler cooling	low ambient air pressure	
11	823	A	If you install a hydraulic hose on a unit and fail to leave sufficient room for expansion, which of the following problems will develop?	The hose may pull loose from its fittings.	The components connected by the hose will be damaged.	The hydraulic unit will fail to acquire any power.	The hydraulic fluid will overheat and breakdown.	

11	824	B	The refrigeration compressor in a water cooled refrigeration system is short cycling on the high pressure cutout switch. One reason for this could be the _____.	system is low on refrigerant	high pressure cutout switch is improperly adjusted	discharge valves are leaking slightly	discharge valves are leaking excessively	
11	825	D	In the operation of a flash type evaporator equipped with air ejectors, the air and noncondensable gases are evacuated directly from the _____.	first stage flash chamber	second stage flash chamber	first stage after condenser	second stage distilling condenser	
11	826	C	Most pump manufacturers recommend that the suction piping dimension for centrifugal pumps be _____.	one size smaller than the pump suction nozzle	the same size as the pump suction nozzle	one size larger than the pump suction nozzle	installed with a short radius elbow at the pump	
11	827	C	The usual method of unloading a low pressure air compressor at start-up is accomplished by _____.	holding the discharge valve open	the use of a precharged accumulator	holding the suction valve open	temporarily discharging to the air receiver	
11	828	A	Hydraulic systems typically operated for intermittent service do not require the use of oil coolers and would include all of the following except _____?	Constant tension mooring winch system	Hatch cover systems	Watertight door system	Internal combustion engine hydraulic starter system	
11	830	C	In a spring opposed, diaphragm-type, pneumatic power unit shown in the illustration, the force exerted on the spring is equal to the air pressure multiplied by the _____.	area of the internal plate	number of spring coils	area of the diaphragm	tension rating of the spring	GS-0051
11	831	B	On tankers using hydraulic tank valve actuation, which of the listed valve types has the highest tendency to develop leaks relative to the valve, and results in more frequent maintenance?	Gate valves	Butterfly valves	Globe valves	Check valves	
11	832	C	Slipping drive belts on a ship service air compressor is a probable symptom of _____.	low lube oil viscosity	fouled intercoolers	a failed unloader	high air receiver pressure	
11	833	A	If you install a new hydraulic hose in a hydraulic system, the hose must be long enough to allow for contraction to prevent _____.	failure of the hydraulic hose connection	excessive flow through the line	friction in other areas of the hydraulic system	overheating of the hydraulic fluid	

11	834	A	The refrigeration system compressor is short cycling on high head pressure when the sea water cooling temperature is 72°F. In this situation, you should _____.	check for sufficient cooling water flow through the condenser	purge noncondensable gases from the receiver	reset the thermostatic expansion valve	completely purge the high pressure side of the system	
11	835	C	The proper file for a finishing cut on soft metal, such as brass, is the _____.	smooth cut file	warding file	mill file	second cut file	
11	836	B	Which of the following statements about pump operations is NOT a correct statement?	In order for a fluid to be pumped, a fluid must be made to flow.	A substance must be cold in order for it to be pumped.	The kinetic energy imparted by the pump can be used to force a liquid through a hydraulic system.	A pump must receive its energy from an external source.	
11	837	D	Unloading of a low pressure, reciprocating, air compressor at start-up can be accomplished by _____.	holding the L.P. discharge valve open	the use of a precharged accumulator	using a permanently enlarged clearance expansion volume	temporarily discharging back to the compressor intake	
11	838	B	If one of the bilge manifold valves is prevented from seating, the _____.	bilge-well connected to that valve, plus the second bilge-well being pumped will be completely emptied	bilge system will lose vacuum, preventing other bilges from being pumped out	aftermost bilge-wells connected to that valve will siphon their contents to the forward bilge-wells	all of the above	
11	839	A	The location of a vessel's frame stations may be obtained from which of the listed drawings?	Profile	Base line	Cross section	Buttock	
11	840	D	Which of the following precautions should always be carried out in dry-dock?	Liquids should never be transferred between tanks without consulting the dock master.	If sea valves have been disassembled, all bonnets must be checked for leakage when the ship is refloated.	Before refloating, all sea chest strainers should be verified as having been replaced.	All of the above.	

11	841	D	Which pump illustrated is fitted with a suction strainer?	Bilge pump	Ballast pump	General service pump	All of the above	GS-0042
11	842	C	If an electric motor driven air compressor fails to start, it may be due to a _____.	leaking discharge valve	jammed suction valve	tripped overload relay	broken discharge unloader	
11	843	B	Machinery driving fuel oil transfer and fuel oil service pumps must be fitted with a remote means of stopping the machinery from _____.	within the space concerned	outside the space concerned	the throttle station	within the fireroom	
11	844	A	The compressor in an air-cooled condensing refrigeration system is short cycling on the high pressure cutout switch. A probable reason for this is the _____.	system is overcharged with refrigerant	system is low on refrigerant	discharge valves are leaking excessively	discharge valves are leaking slightly	
11	845	B	The efficiency of a flash type evaporator can be increased by _____.	lowering brine discharge density	decreasing the absolute pressure of each stage	increasing the saltwater feed heater temperature	increasing the pressure at the spray pipe	
11	846	A	Open end wrenches are _____.	nonadjustable solid wrenches	intended for gripping round objects	not suitable for tubing fittings	used with a speeder handle	
11	847	B	An air compressor can be unloaded at start-up by _____.	holding the discharge valve open	relieving the intercooler pressure to the atmosphere	using an enlarged, permanently opened clearance expansion space	a precharged accumulator	
11	848	D	Which of the following actions should be taken FIRST if a bilge well of a multiple suction bilge system is unable to be pumped out?	Open the bilge pump for inspection.	Remove each of the suction manifold valves.	Remove only the suction manifold valve to the affected bilge well.	Attempt to pump out another bilge well to determine if the entire system is affected.	
11	849	D	Why do roller bearings have higher loading capacities than ball bearings?	They are installed with tighter clearances.	They are subject to less pitting and metal fatigue.	They have a greater tolerance for high speed applications.	They have a greater contact area.	

11	850	D	With regards to fluid flow control, an advantage of pneumatic control systems over electrical control systems is _____.	practically no limit to the power available for a given system	no transmission losses	low energy input	continued control through temporary electrical power losses	
11	851	B	All of the manifold valves shown in the illustration are _____.	gate valves	stop-check or stop valves	stop valves operated from above the bulkhead deck	stop-check lift valves operated from above the bulkhead deck	GS-0042
11	852	C	The seat of a butterfly valve will most likely be constructed of _____.	Monel	stellite	a resilient material	admiralty metal	
11	853	C	Flexible hose under pressure in a hydraulic system will _____.	tend to twist about its long axis	expand in length and in diameter	contract in length and expand in diameter	flex at right angles to the applied pressure	
11	854	C	The compressor in the ship service refrigeration system is short cycling on the high pressure cutout switch. The probable reason for this is the _____.	discharge valves are leaking excessively	discharge valves are leaking slightly	condenser is getting insufficient cooling water flow	system is low on refrigerant	
11	855	C	Which of the following statements describes the relationship between flash point and ignition temperature?	Both are higher than normal burning temperatures.	The flash point is always higher.	The ignition temperature is always higher.	They are not necessarily related.	
11	856	C	The wrench size for a 3/4 inch American National bolt is _____.	10/24 inch	3/4 inch	1 1/4 inches	1 1/2 inches	
11	858	B	You are unable to pump out the aft starboard engine room bilge well that is fouled, with one foot of water over the top of the bilge well, what action should be carried out?	Send the wiper into the well with only a scoop and pail.	Remove the bilge manifold valve and attempt to back flush the line.	Simultaneously operate all available bilge pumps.	It is only necessary to transfer half the contents of a drum of degreaser into the bilge well.	
11	859	D	In the illustrated steam pressure reducing valve, the purpose of the item labeled "C" is to _____.	provide sensing of downstream pressure to the control diaphragm	equalize pressure above and below the power piston	equalize pressure above and below the pilot valve	provide a supply conduit of actuating steam for the power piston	GS-0044

11	860	B	On tank vessels using an automatic tape wells, free movement of the tape is normally checked by _____.	removing the side plate	operating the hand clutch	comparing with a hand tape	using litmus paste	
11	861	B	In order for all of the bilge pump discharge to pass through the oily water separator, shown in the illustration, the oily water separator bypass valve must be _____.	completely open	completely closed	only cracked open	throttled	GS-0042
11	862	D	The valve depicted in the illustration shown is a _____.	gate valve	check valve	globe valve	butterfly valve	GS-0055
11	863	D	Coast Guard Regulations (46 CFR) require remote controls for stopping machinery driving fuel oil service pumps. These controls shall be _____.	located at the control platform	provided with a locked cover	accessible to authorized personnel only	protected against accidental operation	
11	864	B	If a refrigeration compressor will not start, the reason may be _____.	the pressure regulating valve is not closing	an excessive lack of refrigerant in the system	badly leaking discharge valves	worn piston rings	
11	865	C	The lowest temperature required to cause self-sustained combustion of a substance independent of any outside source of ignition is called _____.	explosive range	flash point	ignition temperature	combustion temperature	
11	866	D	The purpose of the wearing rings used in a centrifugal pump is to _____.	prevent an internal explosion in the pump when it is overheated	enable a visual inspection of the pump while it is running	insure a proper alignment of the pump coupling to the driver	accomodate for friction between the impeller and the casing	
11	868	C	The aft starboard bilge well is clogged, and back flushing has not been successful. The next practical solution would be to _____.	change the trim of the ship to port in order to pump out the bilges for the remainder of the voyage	place 20 gallons (75.7 L) of fuel oil tank wash into the affected bilge well to clear the blockage	properly and safely empty the well with a portable pump then manually muck it out	all of the above	

11	869	B	According to the illustration, which of the following statements represents the order of events required to occur for the device to close?	A vacuum is created in chamber "III" as water flows from the toilet, drawing "C" into the closed position.	Once "C" has lifted, "A" will reseat with water passing through "H", pressure gradually builds in chamber "I", developing sufficient force to reseat "C".	A vacuum is created in chamber "III" as a result of the high flow rate of water passing through this chamber, drawing "C" down on its seat.	Releasing "E" physically draws "C" down on its seat.	GS-0155
11	870	C	On tank vessels using an automatic tape well for gaging tanks, the hand clutch is used to _____.	adjust the tape weight	lower the thieving rod	roll up the tape	calibrate the tank	
11	871	C	Automatic pressure control valves for steam service require periodic maintenance inspections because they _____.	are subjected to high compressive stress	are subjected to a wide range of temperatures and pressures	continuously throttle steam which results in wire drawing and erosion of the valve	receive high pressure air from the pilot valve	
11	872	D	Double cut files are most effective when used for _____.	sharpening tools	draw filing	finish work	rough work	
11	873	D	Which of the listed figures represents the configuration and alignment of the inlet/outlet head, as viewed from the tube side?	A	B	C	D	GS-0122
11	874	C	When a refrigeration compressor motor fails to start, the FIRST thing that should be checked for is a _____.	loose expansion valve control bulb	low differential setting on the H.P. cutout	blown fuse in the motor circuit	faulty suction pressure regulator	
11	875	B	Clearances between the impeller hub and casing of a centrifugal pump are checked with the use of _____.	wooden wedges	an accurate set of feeler gages	a machinist's rule	a depth micrometer	
11	876	A	Air compressors are equipped with unloading systems for the purpose of _____.	removing all but the frictional load during starting	relieving intercoolers of high temperature buildups	providing high starting torque in the drive motor	seating valve plates during compressor shutdown	

11	877	B	The simplest method to use for determining if a centrifugal pump is operating as designed, is to _____.	closely observe the pump discharge temperature	close off the discharge valve, and watch for a rise in pressure	momentarily close off the suction valve, and watch for a rise in pressure	use a clamp on ammeter and compare the readings to past records	
11	878	D	The pressure of an operating hydraulic system, as indicated by a pressure gauge, is a result of the fluid flow overcoming _____.	internal resistance to flow	resistance of the internal components	the load applied to the system	all of the above	
11	879	D	As shown in the illustration, a section of pipe with a 3.068 inch internal diameter, has a wall thickness of .216". When the pipe is bent into a 90° turn, the length of the outside edge of the curve "A-B" will exceed the length of the inside edge of the curve "C-D" by _____.	4.714 inches	5.054 inches	5.161 inches	5.498 inches	GS-0108
11	880	A	When pressure is applied to the Bourdon tube gage shown in the illustration, the _____.	gage pointer will move in a clockwise direction	sector and pinion will remain stationary	gage tube expands and grows longer	connecting link changes the set point of the pointer	GS-0114
11	881	A	Which of the listed pumps, shown in the illustration, can be used to take suction on the forward, port, engine room bilge?	Bilge pump	Ballast pump	General service pump	All of the above	GS-0042
11	882	C	Which of the following statements concerning butterfly valves is correct?	Special tools are required for lapping or grinding.	It is impossible to throttle flow with a butterfly valve.	To close the valve, it is only necessary to turn the handle a quarter of a turn.	The butterfly valve should never be used in a freshwater system.	
11	883	A	Which of the listed illustrations correctly represents the installation of a hydraulic hose?	A	B	C	D	GS-0063
11	884	D	If a large difference exists between the compressor discharge pressure and the pressure corresponding to the existing condensing temperature in a refrigeration system, you should _____.	increase the flow of the cooling water through the condenser	adjust the high pressure cutout to maintain the desired pressure	open the hot gas bypass temporarily to reduce capacity	purge noncondensable gases to reduce the excess pressure	

11	885	B	As shown in the illustration, the eccentric reducer, used as a transition piece between a centrifugal pump suction flange and the suction piping flange, must be installed with the _____.	large diameter flange connected to the pump	reducer arranged to prevent the accumulation of air in the suction piping	eccentric portion above the pump suction centerline	eccentric portion at right angles to the pump suction centerline	GS-0089
11	886	C	The names plug, bottom, and taper refer to _____.	pipe fittings	measuring instruments	machinist's hand taps	drill press parts	
11	887	B	One of three available centrifugal salt water service pumps is in operation with a sea water temperature of 50°F. The cooling temperature of all systems supplied by this pump appear to be high. Therefore, you should _____.	only need to start a second pump and operate it in parallel	start a second pump and place it on line, close the discharge valve on the original pump and watch for a rise in the discharge pressure	after starting the second pump open the casing vent valve of the first pump, then secure the first pump	after starting the second pump secure the first pump and do nothing else with the salt water service system	
11	888	B	Pressure in an operating hydraulic system is developed _____.	only by the pump as its primary function	by resistance to the fluid flow through the system	by the thermal input to the system's fluid	solely by the charge applied by the accumulators	
11	891	B	On small passenger vessels, separation of machinery and fuel tank spaces shall be _____.	provided between each of these spaces by watertight and/or vaportight bulkheads	separated from accommodation spaces by watertight and/or vaportight bulkheads	not considered as essential	separated from accommodations spaces by non-continuous bulkheads	
11	892	A	Which of the listed types of files is the best for producing a fine finish on metal?	Mill	Float	Warding	Second cut	
11	893	B	Which of the following systems, according to Coast Guard Regulations (46 CFR) must have an emergency stop, protected with a glass enclosure, and located outside of the machinery space?	Main fire pump	Fuel oil service pump	Main circulating/bilge injection valve	All of the above	
11	894	C	The accumulation of air and other noncondensable gases in a refrigeration system will _____.	cause a loss of the liquid seal	create a vapor lock in the liquid receiver	collect in the condenser	cause foaming of the oil in the crankcase	

11	895	B	The rudder pintle is identified in the illustration by the item lettered _____.	A	B	E	F	GS-0101
11	896	A	An eccentric reducer, used as a transition piece between a centrifugal pump suction flange and the suction piping flange, must be installed with the eccentric portion below the suction pipe centerline to _____.	prevent the formation of air pockets	allow sediment to settle on the bottom	reduce vapor pressure of the water entering the pump suction	slope the suction line upward at the pump	GS-0089
11	897	D	Which pump installation would require an external source of sealing water?	Main circulator pump jacket water cooling	Salt water service pump	Auxiliary fire pump	Bilge pump	
11	899	C	If a block and tackle arrangement were rigged as shown in figure "C" of the illustration and "W" is 250 lbs, the amount of force "P" required to hold the load stationary would be _____.	83.33 lbs.	104.16 lbs.	125.00 lbs.	250.00 lbs.	GS-0110
11	900	A	When the pressure on a compound gage is released, the gage pointer is returned to zero psig by action of the _____.	Bourdon tube	spring return arm	compound diaphragm	compensating spring	
11	901	C	Hand taps are provided in sets of three, with each being known as _____.	taper, plug, and finish	short, medium, and long	taper, plug, and bottom	starting, through, and finishing	
11	902	B	A lube oil filter can be used to remove most contaminants from lube oil. A contaminant which will remain in the lube oil after filtering is _____.	acid	fuel oil	sediment	water	
11	903	D	When installing a hydraulic hose, which of the following precautions should be taken?	The hose should not be twisted.	The hose should be protected with a sleeve if it is subjected to rubbing.	There should be some slack in the hose.	All of the above.	
11	904	B	Air entering an air-cooled refrigeration system is indicated by _____.	frosting of the liquid line	higher than normal head pressure	a clear sight glass	abnormally cold reefer boxes	
11	905	A	Which of the following files will produce the finest surface on a work piece being finished filed in a lathe?	A mill file	A double cut file	Any bastard cut file	All warding files	

11	906	C	How often should cargo oil pump relief valves on tank vessels to be tested?	Prior to each cargo discharge operation.	At least once each voyage.	At least once a year.	At each biennial inspection.	
11	907	D	In most horizontally split centrifugal pump casings, wearing rings are prevented from rotating by _____.	swelling the wearing rings into the casing	using wear rings with a larger than normal outside diameter and having the casing 'crush' them in place	using one dowel pin pressed into the side of the ring, then fitting the pin into a hole drilled into the side of the casing ring grove	using an extended lip formed on one half of the ring and using the upper casing half to trap the lip when the casing is reassembled	
11	910	C	Pigtails, or siphons, are used to protect Bourdon tube-type gages from the direct exposure to steam by _____.	changing the direction of the steam flow	rapidly reducing the steam velocity	creating a condensate seal	bleeding off a portion of the steam	
11	911	B	Round split dies are usually adjustable to _____.	allow threading on oversized stock	control the tightness of the thread fit	to help start the die squarely on the round stock	allow threading up to a shoulder	
11	912	A	The general service pump is to be used to remove clean water from the No. 3 port double-bottom cofferdam and discharge it through the ballast overboard discharge. What are the minimum number of valves, shown in the illustration, that must be opened on both the suction and discharge to accomplish this task?	Four	Five	Six	Seven	GS-0042
11	913	C	Fluctuating pressures and temperatures in an evaporator will _____.	eliminate most of the scale formation in the first effect	increase the heat level in all effects	increase the probability of priming	automatically cold shock the evaporator	
11	914	D	The presence of bubbles in a refrigeration system liquid line may _____.	promote refrigerant dehydration	be absorbed in the receiver	cause low condensing pressure	carry moisture and lead to corrosion	
11	915	A	A mill file is used to _____.	produce a very fine finish by draw filing	produce a coarse finish by push filing	file lead	file plastic	

11	916	C	Dirt should not be allowed to contaminate a grease lubricant because the _____.	dirt will cause corrosion of bearing	bearings will leak oil excessively	dirt is very abrasive when mixed with grease	grease will become inflammable	
11	917	A	The function of a centrifugal pump double volute casing is to _____.	reduce radial thrust on the impeller	double the liquid velocity through the pump when compared to a single volute	reduce hydraulic end thrust	provide the effect of multi-staging	
11	919	D	A cylindrical tank measures 10 feet in diameter and 20 feet in length, weighs 4 long tons when empty. When completely filled with a petroleum product having an API gravity of 35.5 at 60°F, what is the total weight of the tank and its contents in long tons?	29 long tons	33 long tons	37 long tons	41 long tons	GS-0149
11	920	D	Differential pressures can be measured with the use of a _____.	diaphragm type gage	pressure transducer	manometer	all of the above	
11	921	B	If you are cutting external threads by hand and you start the die at an angle, the threads will _____.	be out of round on the work	be cut crooked on the work	be rough, weak, and easily broken	straighten out after the third revolution	
11	922	D	Which of the listed statements is a characteristic of the liquid charged power element used with thermostatic expansion valves?	At the designed operating temperature, the liquid refrigerant charge has changed to a vapor.	The liquid refrigerant tends to collect at the bellows or diaphragm and reduces the valve sensitivity.	The sensing bulb is empty of liquid refrigerant charge at the designed operating temperature.	The sensing bulb is never emptied of liquid refrigerant under normal operating conditions.	
11	923	D	Rapid fluctuations in the shell pressure in a submerged tube distilling unit will cause _____.	increased heat levels in the entire unit	decreased priming and high salinity distillate	first effect scale formation to be reduced	priming in the last effect shell	

11	924	A	Air trapped in a refrigeration system using a water-cooled condenser is usually indicated by _____.	unusually high head pressure when compared to the existing temperature of the liquid refrigerant	higher than normal liquid level in the receiver	unusually lower than normal discharge pressure when compared to the existing temperature of the liquid refrigerant	higher than normal liquid refrigerant temperature	
11	925	A	Which of the following types of files will produce a fine finish when draw filing?	Mill cut	Bastard	Double cut	Second cut	
11	926	B	The valve best suited for throttling gas or liquid flow in a pipeline is the _____.	gate valve	globe valve	check valve	plug cock	
11	927	D	In order to properly remove air from the casing of a centrifugal pump when starting, the pump should have a _____.	positive head	negative suction head	mechanical seal	vent valve attached to the casing at the top of the volute	
11	928	D	A hydraulic flow control circuit is shown in the illustration, and is known as a _____.	metered-in circuit	metered-out circuit	bleed-in circuit	bleed-off circuit	GS-0107
11	929	D	In the refrigeration system illustrated, the liquid line strainer is located between the _____.	solenoid valve and thermal expansion valve only	solenoid valve and back pressure valve only	condenser and receiver only	receiver and solenoid valve only	RA-0005
11	930	B	According to the illustrated water filled U-tube draft gage, what is the converted draft reading in pounds per square inch?	.072 psi	.144 psi	.216 psi	.324 psi	GS-0115
11	931	C	The tool used in precision work to smooth or enlarge a slightly undersized hole, is called a _____.	round out	round file	reamer	hole driller	
11	932	A	Copper sheet metal that is to be used as a gasket, is usually annealed by heating it to a cherry red color, and then _____.	dousing it in cold water	cooling it slowly in air	quenching it slowly in oil	drawing its temper quickly	
11	933	D	Scale accumulation on evaporator heat exchange surfaces _____.	increases brine density	increases distillate salinity	reduces metal corrosion	reduces heat transfer	

11	934	B	Excessive circulation of the lubricating oil with the refrigerant in a refrigeration system will cause _____.	carbon deposits on the compressor suction valves	the evaporator temperature to increase	rapid corrosion of the thermal expansion valve	no operating problems	
11	935	C	The first step when resetting the slide valves on a duplex reciprocating pump is to _____.	position the steam pistons on 3/4 stroke	ensure the balance piston is on the downstroke	place the steam pistons in the mid stroke position	measure the present port openings to ensure reassembly will be the same	
11	937	C	Which of the following centrifugal pump components converts the liquid kinetic energy of velocity to the potential energy of pressure?	Impeller	Electric motor	Volute	Eye	
11	939	D	If the temperature in a hot air manifold were found to be 122°F, what will be the equivalent reading on the centigrade scale?	35°C	40°C	45°C	50°C	
11	940	D	The pressure indicated by the U-tube manometer shown in the illustration is equal to _____.	-2 inches of water	+2 inches of water	-4 inches of water	+4 inches of water	GS-0115
11	941	C	An American Standard Tapered pipe thread has a taper of _____.	1/4 inch per foot	1/2 inch per foot	3/4 inch per foot	1 inch per foot	
11	942	D	When replacing a gasket in a six-bolt flanged joint, in what order should the bolts be tightened?	Each bolt should be installed and tightened in consecutive order in the clockwise direction.	Each bolt should be installed and tightened in consecutive order in the counterclockwise direction.	Install and tighten bolts 1, 3, 4, 2, 5, and 6, in that order.	Install and tighten bolts in pairs which are opposite each other in the flange (1-4, 2-5, and 3-6).	
11	944	B	Sludge may form in the crankcase of an air conditioning compressor as a result of _____.	bubbling refrigerant	overheating and oxidation	lowered operating temperatures	reducing the cloud or floc point	
11	945	A	Which of the following statements is correct concerning the 'flash point' of a liquid?	It is lower than the ignition temperature.	It is the temperature at which a substance will spontaneously ignite.	It is the temperature at which a substance, when ignited, will continue to burn.	It is the temperature at which the released vapors will fall within the explosive range.	

11	947	B	The primary function of a centrifugal pump volute is to _____.	develop a high velocity liquid	convert velocity to pressure	limit hydraulic end thrust	initiate flow	
11	949	A	If your vessel burns 8 tons of fuel per hour at 15 knots, how many tons per hour will it burn at 18 knots?	13.82 tons	15.61 tons	16.00 tons	16.37 tons	
11	950	A	The adapter for the tachometer shown in the illustration is designed for reading shaft RPM as long as the shaft is accessible _____.	at one end	at any point along its length	to the impeller	to the impulse transmitter	GS-0117
11	951	B	The complete tool used for manually cutting threads on pipe is called a pipe _____.	tool and die	stock and die	tap	chaser	
11	953	C	The purpose of the six-way valve used in an electro-hydraulic steering system is to _____.	parallel rudder motion to the steering wheel	take the pump off stroke when desired rudder angle is attained	redirect hydraulic fluid flow when changing over pumps	ensure positive contact between the Rapson slide and the rudder post	
11	954	B	Sludge may form in the lubricating oil crankcase of a reciprocating air conditioning compressor as a result of _____.	wax precipitation in the lube oil	contamination by dust, scale, or moisture	refrigerant bubbles in the lube oil	refrigerant reducing the lube oil viscosity	
11	955	C	Shown in the illustration is a mechanical shaft seal providing constant surface contact, regardless of hull deflections, draft, or sea conditions while underway. This is ensured by the _____.	drive alignment bolts	adapter plate	bellows	inflatable seal	GS-0135
11	956	B	The second stage feed water temperature and shell absolute pressure in a multistage, flash type, distilling plant is _____.	higher than the first stage feedwater temperature and absolute shell pressure	lower than the first stage feedwater temperature and absolute shell pressure	the same as the first stage feedwater temperature and absolute shell pressure	not related to the feedwater temperature and absolute shell pressure	
11	957	B	The percentage of impurities in a specific fuel oil sample is determined by _____.	settling in a fuel tank	testing in a laboratory centrifuge	burning in a calorimeter	testing in a closed cup	

11	958	D	Which of the following statements describes the actions of an axial piston motor with a full deflection variable position tilting box?	Control over speed, direction, and stopping would be better than having the pump equipped with the tilting box.	Maximum speed when rotated in the 'hauling in' direction would be obtained with the tilting box just prior to neutral stroke, while 'pay out' would be the opposite.	Maximum torque, when rotated in the 'pay out' direction would be obtained with the tilting box just prior to neutral stroke, while 'hauling in' would be the opposite.	Maximum speed in either direction of rotation would be achieved just beyond of neutral stroke, making reversal of direction difficult.	
11	959	A	A ship travels 234.02 nautical miles in 24 hours at an average propeller speed of 60 RPM. If the propeller pitch is 20.07 feet, what is the propeller slip during this passage?	17.95%	20.46%	22.10%	26.20%	
11	960	C	To avoid corrosion and/or oxidation of the element, a thermometer bulb is often protected by a 'well' or casing. In addition to protecting the element, the 'well' will also _____.	cause consistently higher than actual readings	cause consistently lower than actual readings	require a longer time for the element to reach thermal equilibrium with the system being measured	increase the sensitivity of the element	
11	961	C	Taps and dies used for threading pipe are _____.	not hardened	not fluted	tapered	straight	
11	962	B	Which of the following types of files is generally used for finishing?	A double cut file	A single cut file	Any bastard cut file	Only a double bastard cut file	
11	963	B	If the brine level of a double effect soloshell evaporator is above the sight glass, which action should be taken?	Do nothing as this is the normal operating level.	The feed rate should be reduced and the brine discharge valve opened slightly.	The brine overflow weir should be raised to allow greater outflow.	The brine section should be drained down a minimum of 6 inches below the seawater heater bundle.	

11	964	C	Sludge may be formed in the oil in the crankcase of a reciprocating air conditioning compressor as a result of _____.	refrigerant bubbles in the lube oil	refrigerant reducing the lube oil viscosity	oxidation of the lube oil from overheating	reducing the floc or cloud point of the oil	
11	965	A	Small leaks in gaskets should be stopped immediately after installation because _____.	the leak will probably worsen in time	the gasket may not seal itself for several hours	the leak will result in severe flange distortion	small leaks cause the pipeline to creep	
11	966	C	The temperature of the steam flow to the saltwater feed heater, in a flash type evaporator can be manipulated by a/an _____.	pressure regulator within the supply orifice	thermally actuated bypass valve	attemporator in the steam supply piping	sensor wired in with the three-way salinity dump valve	
11	967	B	Assume identical impeller diameter, width and speed. Which of the following impellers will produce the greatest liquid velocity?	A single stage straight vane impeller	A single stage curved vane impeller	A dual integeral impeller unit operating at 10% lower speed	A dual impeller with multiple stepped curved vanes	
11	968	B	With regards to axial piston hydraulic pump/motor power units, motor speed is a function of fluid flow rate generated by the pump. Which of the following statements describes why the motor is NOT manipulated as is the pump?	The designers of the equipment have never considered the use of the tilting box with a hydraulic motor.	A comparable pump tilting box if used in a hydraulic motor, would eliminate the hydraulic lock to the system when the motor is placed in neutral stroke.	Reduction gears would be required if a hydraulic motor were designed with a tilting box.	A tilting box hydraulic motor could never produce more than one horsepower.	
11	969	C	In the circle illustrated, the circumference is 62.8 feet. What is the area of the shaded portion?	27.5 square feet	28.0 square feet	28.5 square feet	29.0 square feet	GS-0134
11	970	B	What characteristic can be applied to Refrigerant 134a when compared to R-12?	It is corrosive.	It is not compatable with mineral based lubricants.	It is visible as a blue fog.	It has a distinctive taste.	
11	971	B	The tool used for cutting external pipe threads is called a pipe _____.	cutter	stock and die	threader	ratchet cutter	

11	972	A	A reading of 0.625 inch on a micrometer with a 2 to 3 inch range would be equal to _____.	2 5/8 inches	2 7/16 inches	3 1/8 inches	3 9/16 inches	
11	974	A	Foaming of the oil in a refrigeration compressor crankcase is caused by _____.	refrigerant boiling out of solution from the lube oil	liquid refrigerant flooding the compressor and system	lube oil viscosity being reduced by refrigerant dilution	compressor suction pressure suddenly increasing	
11	975	B	To properly make and fit a new gasket to a flange, you should _____.	place the gasket over the flange and knock off the excess material with a lead mallet	remove excess gasket material by trimming with scissors or tin snips	make up the flanged joint to make an impression of the flange surfaces to insure a pattern for proper alignment	cut grooves into the flange with a chisel to ensure good gasket contact	
11	976	C	In a two stage flash evaporator, heated feed water is vaporized in the _____.	first effect tube nest	distiller feedwater heater	first and second stage flash chambers	first and second stage vapor separators	
11	977	D	Two individual centrifugal pump impellers of the same diameter, width, and rotating speed are to be compared, one is cast with straight vanes, the other with curved vanes. Which of the following statements is correct?	The straight vane impeller develops a higher level of kinetic energy.	The straight vane impeller has the potential for producing a greater discharge pressure.	The curved vane impeller is less likely to develop cavitation.	The curved vane impeller will develop a greater increase in the liquid velocity.	
11	978	B	Dry seal threads, typically used for tubing to pipe connectors, and threaded piping in hydraulic systems are _____.	the same as National Pipe threads	different than NPT as the crest of a matching thread is in contact with the trough of the opposing thread	different than NPT as the flanks of the matching threads are in contact with the opposing threads	the same as National Fine threads	
11	980	D	How may the response time for a thermometer using a protective well be reduced?	Fill the well with nitrogen.	Fill the well with water.	Drill small holes in the well.	Pack the space around the bulb with graphite.	

11	981	B	When installing a new rotary pump, the suction piping should _____.	be of the same diameter as the pump suction connection	be at least one size larger than the pump suction connection	be the next size smaller than the pump suction connection	be sloped to the pump	
11	982	A	In sewage treatment, the term 'maceration' refers to the process of _____.	breaking up solid matter into fine particles	precipitating nondecomposed waste in a collection tank	chemically adjusting the sewage pH to 7.0	eliminating bacterium coli from the sewage	
11	983	D	Excessive scale formation in a distilling plant may result from _____.	poor distillate quality	reduced evaporator capacity	low brine concentration	improper vacuum regulation	
11	984	B	In a refrigeration system, foaming of the crankcase oil may cause the _____.	expansion valve to overfeed	compressor to knock	water regulating valve to fail	crankcase drains to plug	
11	985	A	If a continuous and steady flow of lube oil is provided, which of the listed pressures represents the lowest supply pressure at which a small high-speed bearing can be safely lubricated?	1 psig	5 psig	10 psig	15 psig	
11	986	A	The final heating of the feed water in a flash type distilling plant is carried out by _____.	low pressure steam admitted to the feedwater heater	heat exchange in the first-stage feedbox	vaporization in the first-stage flash chamber	heat exchange in each stage distiller condenser	
11	987	C	The centrifugal pump component responsible for converting the mechanical energy of the liquid being pumped, to that of kinetic energy is the _____.	electric motor	volute	impeller	diffusion nozzle	
11	988	D	In which of the listed hydraulic system components could an O-ring seal be satisfactorily used in providing a seal?	High pressure pump shaft casing	Low pressure pump shaft casing	Linear actuator without nylon insert	Relief valve spool	

11	989	D	As shown in the illustration, a section of 4.5 inch internal diameter standard weight, seamless steel pipe, has a wall thickness of .355". When the pipe is bent into a 90° turn, the length of the outside edge of the curve "A-B" will exceed the length of the inside edge of the curve "C-D" by _____.	5.498 inches	6.511 inches	7.069 inches	8.184 inches	GS-0108
11	990	D	An example of an antifriction bearing is a _____.	rubber cutlass strut bearing	line shaft or spring bearing	Kingsbury thrust bearing	ball bearing	
11	992	C	The device shown in the illustration is used for removing moisture from the refrigerant in the system, and is located between points _____.	A and B	B and C	C and D	D and E	RA-0012
11	993	B	The follow-up gear on an electro-hydraulic steering gear _____.	relieves excessive fluid pressure	takes the pump off stroke when the desired rudder angle is attained	synchronizes wheel position with the rudder position	returns the rudder to midposition when the wheel is released	
11	994	A	Excessive oil foaming in the crankcase of a refrigeration compressor can result in _____.	overheated compressor bearings	excess lube oil viscosity	carbon deposits on the compressor piston rings	wax crystals forming in the lubricant	
11	995	B	A metal scribe should only be used to _____.	remove packing	mark on metal	punch gasket holes	clean file teeth	
11	996	D	In a two-stage flash evaporator, the sea water feed temperature is increased as it passes through the _____.	first-stage distilling condenser	second-stage distilling condenser	salt water feed heater	all of the above	
11	997	B	The basic function of the centrifugal pump impeller is to _____.	directly increase the pressure of the liquid being pumped	directly increase the velocity of the liquid being pumped	convert the potential energy of the liquid to kinetic energy	separate air from the liquid being pumped	
11	998	C	To convert a vane type hydraulic pump to a hydraulic motor, which of the following would have to be done?	Double the casing thickness.	Install an enlarged control ring around the rotor.	Provide small springs between the vanes and the base of the vane slots.	Provide one additional slot and vane.	

11	999	B	It is desired to operate an air compressor with a 12 inch flywheel at a speed of 510 rpm. If the motor runs at 1750 rpm, what size motor pulley should be used?	2.5 inches	3.5 inches	4.5 inches	5.5 inches	
11	1000	C	Which of the listed characteristics is typical of a strip chart graphic recorder?	The time graduations fan out from the center.	The data charts are more easily stored than the circular charts.	The variable being measured is drawn on rectangular coordinates.	Strip charts are more difficult to read than circular charts.	
11	1001	D	One complete turn of a micrometer screw will move the spindle _____.	0.001 inch	0.0025 inch	0.010 inch	0.025 inch	
11	1002	C	Pipe thread taps are _____.	not hardened	not fluted	tapered	straight	
11	1003	A	A roughened checkered surface is machined by a lathe on round stock using a _____.	knurling tool	checkering tool	chamfering tool	threading tool	
11	1004	C	Which of the following statements is correct concerning a typical shipboard multi-coil refrigeration system?	The liquid receiver functions to collect and remove noncondensable gases.	A thermostatic expansion valve is used to control refrigerated space temperature.	Refrigerant temperature in an evaporator is directly related to refrigerant pressure.	Dehydrators must be used continuously in a refrigeration system.	
11	1005	C	One of the consequences in continuing to operate a centrifugal bilge pump with the discharge valve closed, is that the _____.	motor overload will open	relief valve will open	pump will overheat	motor will overheat	
11	1006	A	Which of the listed punches can be properly used to free a tapered pin 'frozen' in its hole?	Drift punch	Aligning punch	Center punch	Prick punch	
11	1007	D	If a centrifugal pump is being driven by a steam turbine and the discharge valve is closed off, the pump will _____.	slow down	run cooler	speed up by 5% until the discharge valve is reopened	no longer continue to internally convert the resultant energy imparted to the pump	

11	1008	A	The device illustrated is considered to be a pump. Which of the following statements is true if it is to be used as a hydraulic motor?	Pressurized fluid would have to be supplied to the existing indicted casing outlet.	Roller vanes would have to be exchanged for sliding vanes.	The diameter of the rotor would have to be increased.	Nothing could be done to convert this device to a hydraulic motor.	GS-0074
11	1009	B	The mechanical efficiency of a particular centrifugal bilge pump is 92.5% . What is the smallest horsepower motor that can effectively operate this pump at a capacity of 100 gpm with a discharge head of 15 feet?	1/4 HP	1/2 HP	3/4 HP	1.0 HP	
11	1010	C	Which of the listed types of bearings is an example of a half bearing?	Piston pin bushing	Thrust bearing	Spring bearing	All of the above.	
11	1011	C	When using a one inch micrometer, a reading of .875 is equal to _____.	1/2 inch	5/8 inch	7/8 inch	15/16 inch	
11	1012	B	The process of grinding or shredding sewage into smaller particles is known as _____.	detention	comminution	bulking	skimming	
11	1014	C	The sudden reduction of pressure occurring within the crankcase of a refrigeration compressor during starting causes the _____.	sudden evaporation of wax crystals in the lubricant	sudden evaporation of entrapped air in the lubricant	release of refrigerant from the oil/refrigerant mixture	release of dissolved lubricant from the refrigerant	
11	1015	B	If an operating bilge pump is developing good vacuum, but is unable to discharge any water, which of the following problems is the most probable cause?	The wearing rings are excessively worn.	The suction strainer is clogged.	The discharge valve is clogged.	The shaft is worn.	
11	1016	C	Which of the additives listed will maintain the suspension of fine residue particles in lube oil?	Floc point	Suppressant	Dispersant	All of the above.	
11	1017	A	A centrifugal pump produces flow with a resulting discharge head by energy conversion. It is typical for the energy conversion to follow the order of _____.	mechanical energy to kinetic energy to potential energy	mechanical energy to potential energy to kinetic energy	potential energy to mechanical energy to kinetic energy	kinetic energy to mechanical energy to potential energy	

11	1018	C	A combined hydraulic pump unit is generally used where _____.	the flow rate across both pump elements is to be the same, but the head pressure from the second element is to be double that of the first element	the combined flow rate from each pump element will be double that of either single pump element	each of the two pump elements will discharge to segregated segments of a system.	all of the above	GS-0098
11	1019	C	Upon a vessel's departure from point "A" at 1206, the counter reading was 616729. At midnight, the counter reading was 672889, at which time the engine speed was increased to 82 RPM, and remained the same speed until its arrival at point "B" at 1140 the following day. If the vessel is equipped with a 20 foot 8 inch diameter propeller, having a pitch of 20 feet, and apparent negative slip of 6.65% was calculated for the passage, what observed distance was covered?	353.2 miles	364.8 miles	398.4 miles	413.9 miles	
11	1020	C	The size of ball and roller bearings can be identified by the _____.	rolling member size	inner race cone width	manufacturer's numerical code	outer ring width	
11	1021	C	The terms rough, coarse, bastard, second cut, smooth, and dead smooth refer to the _____.	parts of the file	shape of the file	distance between the parallel cuts on the file	size of the file	
11	1022	D	An advantage of a helical gear pump over a simple gear pump is that the helical gear pump is capable of _____.	maintaining a steadier speed	delivering liquids over greater distances	operating for longer periods of time	producing a smoother discharge flow	
11	1023	B	To properly cut an odd numbered thread with a lathe using the thread dial indicator illustrated, you should close the lathe split, or half-nut on _____.	any line on the dial	any numbered line on the dial	odd numbered lines only	even numbered lines only	GS-0084

11	1024	B	Refrigerant is normally subcooled in a refrigeration or air conditioning system condenser to _____.	maintain adequate coil back pressure	prevent flashing in the liquid line	reduce refrigerant volume in the system	reduce compressor discharge line loading	
11	1025	D	What is the reading of the vernier micrometer caliper scale shown in figure "G" in the illustration?	0.2280 inch	0.2340 inch	0.2520 inch	0.2470 inch	GS-0083
11	1026	B	The terms rough, coarse, bastard, second cut, smooth, and dead smooth refer to the _____.	shape of the file	coarseness of the file teeth	size of the file	cuts of the file	
11	1027	B	A pump is defined as a device that _____.	produces pressure	imparts energy to a fluid to move it from point "A" to point "B"	creates a vacuum to move a liquid in all installations	is to develop a pressure differential	
11	1028	B	A double hydraulic pump unit is generally used where _____.	the flow rate across both pump elements is to be the same, but the head pressure from the second element is to be double that of the first element	the combined flow rate from each pump element will be double that of either single pump element	each of the two pump elements will discharge to segregated segments of a system	all of the above	GS-0097
11	1029	C	A vessel departed from point "A" at 1206 with a counter reading of 616729 and arrived at point "B" with a counter reading of 731929 at 1148 the following day. This vessel is equipped with a 20 foot 8 inch diameter propeller, with a pitch of 20 feet. The observed distance of 404.16 miles was covered at an observed speed of 16.85 knots. What should be the apparent slip for this trip?	1.04%	1.29%	-6.65%	-11.04%	
11	1030	A	Restrictions occurring in the small orifices of pneumatic control system components can be caused by _____.	moisture in the compressed air supply	excessive dryness in the compressed air supply	pressure surging in the compressed air receiver	insufficient lubrication of the system components	

11	1031	D	The best tool to use when attempting to widen the opening of a flanged joint, in preparation for renewing the gasket, is a _____.	gasket cutter	spud wrench	scraper	flange spreader	
11	1032	A	A file handle is fitted to the file's _____.	tang	point	taper	heel	
11	1033	A	To properly cut even numbered threads using the lathe thread dial indicator shown in the illustration, you should close the lathe split or half-nut on _____.	any line on the dial	even numbered lines only	odd numbered lines only	any unnumbered half line	GS-0084
11	1034	A	The principal purpose of subcooling liquid refrigerant prior to its entering the expansion valve is to _____.	increase the refrigerating effect by decreasing the amount of flash gas	allow the refrigerant to enter the throttling device in a saturated condition	increase the refrigerating effect by increasing the amount of flash gas	minimize the temperature drop of the liquid as it passes through the solenoid valve to the outlet side	
11	1035	A	If a bilge pump is able to develop vacuum, but is unable to sufficiently pump out the bilges, you would check for all of the following EXCEPT _____.	the circuit breaker	for leaks in the suction piping	relief valve is not properly seated	the suction strainer	
11	1036	B	Item "E" as shown in the illustration is known as a _____.	rudder stock	rudder post	rudder gudgeon	pintle	GS-0101
11	1038	A	A two stage hydraulic pump unit is used to _____.	develop the same flow rate across both pump elements with the discharge pressure of the second pump element being substantially higher than that of the first stage	produce twice the flow rate than if only one element were to be used	establish two individual flows to segregated segments of one system	supply two individual flows to the same segments of the system if one of the pump elements were to fail	GS-0096

11	1039	A	While starting a hydraulic anchor windlass, you observe that hydraulic pressure does not develop in spite of the proper operation of the electric drive motor. Which of the following actions should you take FIRST to restore pressure?	Make certain that the hydraulic reservoir is filled to the proper level.	Inspect the disc brake on the electric motor for proper operation.	Check the electric motor for an open overload relay contact.	Check for full voltage supply to the electric motor.	
11	1040	C	A primary element used with flow measurement devices highly suitable for liquids containing solids in suspension, is a _____.	concentric orifice	convergent nozzle	venturi tube	pilot tube	
11	1041	A	To safely remove the piston rod packing from the steam end of a reciprocating pump, you should _____.	use a packing hook	open the throttle valve and 'blow' the old packing out	do nothing, as this type of pump utilizes O-rings in lieu of packing	open the steam chest and pry the packing loose with a scraper	
11	1042	B	The tang of a file is the part that _____.	does the cutting	fits into the handle	has crosscut teeth	is opposite the handle	
11	1043	C	When a lathe is used for thread cutting, the number of threads per inch produced is determined by the speed relationship between the _____.	drive motor and spindle	spindle and feed rod	lead screw and head stock spindle	lead screw and feed rod	
11	1044	C	Subcooling is a method of reducing the temperature of the liquid refrigerant below its _____.	freezing point	floc point	condensing temperature	compression temperature	
11	1045	B	The valve which is most suited for regulating the flow through a pipeline is a _____.	gate valve	globe valve	swing-check valve	plug-cock valve	
11	1046	D	The reading on the micrometer scale shown in figure "D" in the illustration is _____.	0.4710 inch	0.4715 inch	0.4810 inch	0.4815 inch	GS-0081
11	1047	C	A centrifugal pump must have a stuffing box liquid sealing line and seal cages installed if the pump _____.	suction head is high, and is handling a cool, debris free liquid	is handling a liquid with a temperature of less than 150°F	suction lift exceeds 10 inches Hg vacuum	discharge is less than 25 psi	
11	1048	D	The illustrated hydraulic pump graphic symbol is used to depict a _____.	parallel, pump unit	two-stage, pump unit	duplex, pump unit	combined, pump unit	GS-0098

11	1049	A	A standard grade of 3 inch steel pipe has an outside diameter of 3.5 inches and an inside diameter of 3.068 inches. What is the nominal size of steel pipe having an outside diameter of 4.0 inches and an inside diameter of 3.548 inches?	3.5 inches	3.75 inches	3 inch nominal size pipe of schedule 80 thickness	3 inch nominal size pipe of schedule 160 thickness	
11	1050	B	Which of the screwdrivers listed is produced with a tip to fit screws with a fourway or cross slot?	Standard	Phillips	Allen	Torx	
11	1051	A	In order to prevent overheating of the packing in the stern tube stuffing box, _____.	the gland is properly adjusted to permit a slight leakage of sea water	stave-type rubber seals are used	cooling water is supplied from the fresh water cooling system	the gland nuts must be tightly taken up to prevent any water leakage	
11	1052	B	Many micrometers are equipped with a ratchet stop at the end of the thimble to _____.	click at each increment of measure	prevent the user from closing the tool with too much force	stop the spindle from sliding out of the barrel	eliminate ratchet movement	
11	1053	B	A follower rest should be used with a lathe to machine _____.	large diameter stock between centers	threads on long slender shafts	work mounted on the lathe carriage	round stock to a finished dimension	
11	1054	B	In the illustrated refrigeration system, component "G" is the _____.	expansion valve	compressor	filter drier	condenser	RA-0012
11	1055	C	Which of the drill sets listed would commonly be referred to as a 'Jobbers Set'?	A set of numbered size drills from 1 to 60.	A set of lettered size drills from A to Z.	A set of fractional size drills from 1/16'' to 1/2''.	A set of fractional size drills from 1/2'' to 2''.	
11	1056	A	If the chemical analysis of a lube oil sample taken from the main propulsion machinery indicates an increased neutralization number the _____.	acidity has increased	viscosity has decreased	demulsibility has improved	tendency to foam is guaranteed to occur	
11	1057	B	The proper design of a centrifugal pump must include a seal cage and sealing line when the pump _____.	takes suction from a low temperature pressurized tank	takes suction from a hot well	is handling a liquid at less than 150°F	has a high positive suction head	

11	1058	C	The illustrated hydraulic pump graphic symbol is used to depict a/an _____.	series-flow pump unit	two-stage pump unit	double pump unit	combined pump unit	GS-0097
11	1059	C	As shown in the illustration, a section of standard weight, seamless steel pipe, has an external diameter of 3.5 inches. When the pipe is bent into a 90° turn, the length of the outside edge of the curve "A-B" will exceed the length of the inside edge of the curve "C-D" by _____.	1.050 inches	2.670 inches	5.498 inches	6.912 inches	GS-0108
11	1060	A	Why is it necessary to have the weight bearing piston of a deadweight gage tester spinning when testing a gage for proper calibration?	Minimizes piston drag and reduces tester error.	Prevents vibration errors in the gage tester.	Minimizes piston speed and reduces tester error.	Allows trapped air below the piston to escape.	
11	1061	B	Some vessels are equipped with a water lubricated stern tube. When at sea, operating under normal conditions, the water service valve from the ship's saltwater system to the bearing should be _____.	closed, and no leakage permitted across the shaft packing	closed, and only slight leakage permitted across the shaft packing	open, and no leakage permitted across the shaft packing	open, and only slight leakage permitted across the shaft packing	
11	1062	C	The correct torque value for a micrometer torque wrench is reached when _____.	the scale is read on the handle	the dial is read on the handle	an audible click is heard and the handle releases	a dial lights on the handle	
11	1063	B	To commence cutting threads with a metal lathe, you should engage the _____.	feed-change lever	split or half-nut	back gear lever	thread-chasing dial	
11	1064	C	Heat is removed from the cooling system, shown in the illustration, by component _____.	5	3	H	E	RA-0012
11	1065	A	When using a micrometer to measure a drill for size, you should measure across the drill _____.	margins	flutes	shank	web	
11	1066	A	A good quality lubricating oil used in any machinery, should be _____.	acid free	capable of emulsifying	a rapid oxidizer	additive free	

11	1067	D	Centrifugal pumps are designed with sealing lines _____.	to prevent the fluid being pumped from pouring out of the stuffing box when a high suction head is available	in place of mechanical seals	in place of slinger rings	to prevent air from entering the pump casing along the shaft	
11	1068	B	The hydraulic pump graphic symbol shown in the illustration, is known as a/an _____.	parallel-flow, pump unit	two-stage, pump unit	double, pump unit	combined, pump unit	GS-0096
11	1069	A	An 8" diameter wheel is driving a 20" diameter wheel via a pair of belts. The power input is supplied by a 5 HP motor rotating the driving wheel at 300 RPM. If the efficiency of the transmission is 80%, what RPM and torque is delivered to the driven wheel?	120 RPM at 4 HP	160 RPM at 4 HP	220 RPM at 4.5 HP	220 RPM at 4.8 HP	
11	1070	A	A rotameter, when used to indicate the rate of fluid flow in distilling plants, is essentially an area meter consisting of a _____.	movable float riding on a rod centered in a tapered tube	piston uncovering a port whose opening is directly proportional to fluid flow	movable orifice plate venturi tube and high pressure tap	rotating vane transmitting nutating motion to a counter mechanism	
11	1071	C	Which of the following methods applies to how a vacuum is created by a jet pump or an eductor?	Centrifugal force converted into potential energy.	A reciprocating plunger directly applying force to a fluid.	A rapidly moving stream of fluid passing through a nozzle.	A propeller drawing a fluid through a venturi nozzle.	
11	1072	B	For greater accuracy, some micrometers have a vernier scale making it possible to read in increments of _____.	five thousands of an inch	ten thousands of an inch	twenty five thousands of an inch	one fortieth of an inch	
11	1073	B	The 60° taper angle machined on work supported by lathe centers is most easily machined by the _____.	taper attachment	compound rest	tailstock setover method	headstock setover method	
11	1074	D	Under normal conditions, the refrigerant enters the compressor in an operating refrigeration system as a _____.	liquid	dry saturated gas	wet saturated gas	superheated vapor	

11	1075	B	The most accurate method of measuring the setting of an inside caliper is to use a/an _____.	thread micrometer	outside micrometer	engineer's scale	dial indicator	
11	1077	A	Sealing lines provide sealing liquid flow to the stuffing box of a centrifugal pump _____.	to help lubricate the shaft packing	to limit the outflow of seawater from the stuffing box of a pump provided with a high suction head	in place of sealing gages	in place of mechanical seals	
11	1078	D	As routine maintenance, the bilge manifold valves are periodically removed and examined. Prior to resecuring the valve bonnets, the valve _____.	disks and seats should be checked and lapped if necessary	bonnet flange gaskets should be renewed if they were cut or torn	stem packing should be renewed if the packing has hardened	all of the above	
11	1079	B	If oil sprays out on a hot piece of machinery, catches fire and does $72,000 damage to your ship, by law this must be reported to the _____.	nearest Coast Guard unit	Officer in Charge, Marine Inspection at the first port of arrival	principal surveyor of the American Bureau of Shipping at the next U.S. port	U.S. Salvage Association Surveyor at the next U.S. port	
11	1080	D	A hydrometer measures specific gravity by comparing the _____.	density of a substance in water with the density of the same subject in air	differences in volume between water and the liquid measured	mass of substance measured with the density of the same substance	buoyancy of an indicator in water with the buoyancy of the same indicator in the liquid being measured	
11	1081	C	An excessive amount of water is prevented from entering a vessel using a water lubricated stern tube bearing by the use of the _____.	propeller hub	lignum vitae	shaft packing	labyrinth seal	
11	1082	A	A micrometer screw has a pitch of _____.	40 threads per inch	50 threads per inch	75 threads per inch	100 threads per inch	
11	1083	D	A taper may be turned on a lathe by _____.	setting over the tailstock	using the compound rest	using the taper attachment	all of the above	
11	1084	C	Refrigerant enters the condenser as a _____.	high pressure liquid	low pressure vapor	high pressure vapor	low pressure liquid	

11	1085	C	If the thimble of a micrometer were turned through one complete revolution, the micrometer would open or close by a linear distance of _____.	.001 inch	.010 inch	.025 inch	.100 inch	
11	1086	B	A micrometer would be used to measure _____.	microseconds	round stock diameter	electrical resistance	low voltages	
11	1087	B	Early models of the flash-type evaporators used a separate shell-and-tube heat exchanger as the air ejector condenser. More recent models use a combined air ejector condenser with the _____.	distilling condenser	salt water feed heater	distillate cooler	flash chamber	
11	1088	A	As a general rule of thumb, the reservoir used in a hydraulic system should have a capacity, when at the normal level, approximately equal to _____.	two to three times the normal flow rate through the system	the flow rate through the system	ten times the flow rate through the system	the number of gallons a pump can circulate in one minute.	
11	1089	B	If the pump for a hydraulic anchor windlass is overheating, the cause may be _____.	excessive drive motor speed	excessive pump discharge pressure	too low of a tilting box angle	insufficient drive motor speed	
11	1090	C	Coast Guard Regulations (46 CFR), require that an indicating light, located at the propulsion control station, be illuminated if there is an overload that would cause overheating of the _____.	forced draft blower motor	fuel pump motor	steering gear motor	condensate pump motor	
11	1091	B	When a vessel is underway, a small amount of water is allowed to leak through the water lubricated stern tube stuffing box in order to _____.	flush out silt and mud which can accumulate from shallow water	prevent overheating of the packing	ensure positive coolant flow through the strut bearings	prevent seizing of the rubber strips in the bearing bushing	
11	1092	D	The rotating part of a micrometer is the known as the _____.	anvil	sleeve	frame	thimble	
11	1093	D	To safely change spindle speeds on a lathe, you must first _____.	disengage the spindle clutch	engage the feed change lever	disengage the feed reverse lever	stop the lathe rotation	
11	1094	D	At point "D", shown in the illustration, the refrigerant is a _____.	low pressure gas	low pressure liquid	high pressure gas	high pressure liquid	RA-0012
11	1096	B	A small hole gauge is used in conjunction with a/an _____.	feeler gauge	micrometer	surface gauge	angle gauge	

11	1097	D	The function of seal cages, or lantern rings installed in the centrifugal pump stuffing boxes, is to _____.	cool the shaft	lubricate the packing	seal air from entering along the shaft	distribute the sealing liquid within the stuffing box	
11	1098	C	The device shown in the illustration has displayed a continuing tendency to leak, despite using extreme care in its installation during numerous repair efforts. Which of the following conditions might be used to prevent the pump shaft leakage from reoccurring with this device?	Apply an adhesive between the shaft and part "D".	Apply an adhesive between parts "D" and "E".	Apply an adhesive to part "G".	Apply an adhesive between part "F" and the shaft.	GS-0071
11	1099	A	The capacity of a particular ballast pump is 200 gallons per minute. Approximately how long will it take to ballast a tank with 68.5 long tons of seawater?	1.5 hours	2.0 hours	2.5 hours	3.0 hours	
11	1100	A	Coast Guard Regulations (46 CFR) require an audible and visible alarm to be actuated in the pilothouse when the actual position of the rudder differs from the position ordered by the follow-up control system by 5 degrees° or more for more than _____.	30 seconds for ordered rudder position changes of 70 degrees	16 seconds for ordered rudder position changes of 5 degrees	10 seconds for ordered rudder position changes of 2.5 degrees	all of the above	
11	1101	B	An oil fog lubrication system is recommended for _____.	gear shaft bearings	high speed continuous operation of roller bearings	low and moderate speed ball bearings	heavily loaded and high-speed ball bearings	
11	1102	C	Which of the devices shown in the illustration is designed for both inside and outside measurements?	A	B	C	D	GS-0073
11	1103	A	When repacking a stuffing box fitted with a lantern ring, which of the following precautions should be observed?	Replace all of the packing rings.	Block off the sealing water connection.	Be certain that all packing is fitted loosely to the shaft.	For good lubrication, apply a fine grade lapping compound between the shaft and packing.	

11	1104	A	In the illustrated refrigeration system, refrigerant exists in its liquid form when it is between components _____.	H and K	L and F	G and D	D and L	RA-0012
11	1105	C	An independent bilge suction is required for _____.	ballast tanks	sludge tanks	machinery space bilges	cargo hold bilges	
11	1106	A	Which of the projections represents the left side view of the object "X" in the illustration?	A	B	C	D	GS-0022
11	1108	D	In a six month period, the illustrated device has needed to be replaced twice due to excessive grinding of part "E". Which of the listed aids might assist in reducing this problem?	Use a softer material for part "D".	Increase the contact surface area of part "F".	Increase the contact surface area of part "E".	Increase the thickness of the cover gasket at point "H".	GS-0071
11	1109	D	The collision bulkhead is located _____.	on the bridge deck	between the passenger and cargo areas	at the stern of the ship	as the first watertight bulkhead aft of the bow in the ship	
11	1110	A	According to Title 46 CFR, of the equipment listed below, which equipment must be tested NOT more than 12 hours prior to getting underway from a U.S. port when the voyage is to be of 48 hours or greater duration?	Steering gear	Shaft generator	All external vessel control communications and alarms	All of the above	
11	1111	D	In a flash distilling unit, evaporator feed (seawater) first absorbs heat in the _____.	vapor feed heater	air ejector condenser	saltwater heater	distillate cooler	
11	1112	D	Which of the listed numeric values represents the smallest size drill?	#0	#1	#60	#80	
11	1113	A	Which of the lathe operations listed is best done with the carriage locked in position?	Facing work held in a chuck.	Turning work held between centers.	Threading internal threads.	Boring an angled hole.	
11	1114	C	Heat is removed from the refrigerant, as shown in the illustration, in the labeled part '____.'	L	K	H	G	RA-0012
11	1115	A	If you turn the adjusting/adjusting screw clockwise of a spring-loaded, internal pilot, reducing valve, you will _____.	compress the adjusting spring against the diaphragm	release spring tension from the diaphragm	increase steam pressure to the reducing valve	decrease spring tension in the main valve	

11	1116	A	The function of lubricating oil is to _____.	reduce friction between contact surfaces in motion	provide even distribution of bearing wear	reduce the accumulation of harmful detergents	maintain a constant oil temperature output at each bearing	
11	1117	A	While at sea, the flash type evaporator is discharging the output to the distill tanks. If it becomes necessary to reduce the feed water temperature below 165°F, you should _____.	continue the current evaporator operation	dump the evaporator to the bilge	secure the evaporator until the feedwater temperature can be raised to 165°F or more	raise the tripping point at the salinity indicating panel for the three-way valve	
11	1118	C	Which of the labeled parts would be considered as the 'dynamic seal' portion of the illustrated device?	A	D	E	G	GS-0071
11	1119	C	If hot oil comes in contact with a diesel engine turbocharger, catches fire, and causes in excess of $(USA)25,000 damage to your ship, by law this must be reported to the _____.	engine manufacturer	American Bureau of Shipping	U.S.C.G. Officer in Charge, Marine Inspection at the next port	vessel underwriters	
11	1120	A	Coast Guard Regulations (46 CFR), make certain requirements regarding over current protection. Steering gear feeder circuits shall be protected only by _____.	a circuit breaker with instantaneous trip	motor running overcurrent protection	a nonrenewable link cartridge fuse	a renewable link cartridge fuse	
11	1121	A	Carbon deposits forming on the discharge valves of an air compressor are caused by oil deterioration under high pressure. The first step in reducing these deposits would be to _____.	reduce the discharge temperatures	increase the compression ratio	use a high viscosity oil	increase the oil volatility	
11	1122	B	When a flash evaporator is being operated in extremely cold water, you may need to throttle the seawater supply to _____.	prevent cold shocking the evaporator	maintain the feedwater temperature above the required minimum input temperature	avoid flooding the evaporator shell	increase the evaporator distilling rate	

11	1123	C	The dead center of a lathe can be properly used only after the end of the work piece has been _____.	counter bored	tapered	center drilled	convexed	
11	1124	B	Flash gas formed in the liquid line of a refrigeration system may cause _____.	pressure at expansion valve inlet to increase	expansion valve pins and seats to erode	expansion valve capacity to increase	pressure difference across the expansion valve to increase	
11	1125	C	Which of the drill sizes listed represents the largest size drill?	A	X	Z	XX	
11	1126	B	Which of the illustrations depicts the correct procedure for applying pipe dope?	A	B	C	D	GS-0046
11	1127	C	If a flash-type evaporator was designed to operate in seawater at 75°F, and the current seawater temperature is 50°F, without readjusting any valve associated with this evaporator, _____.	the capacity will be doubled	the capacity will remain the same regardless of the seawater temperature	it will probably 'trip off line' as a result of violent flashing due to excessive vacuum	it will produce the purest and lowest salinity concentration of distillate that can be produced	
11	1128	D	The device shown in the illustration is commonly known as a/an _____.	quad seal	soft-packing seal	spring seal	mechanical seal	GS-0071
11	1129	B	Overheating of the hydraulic fluid in an electro-hydraulic anchor windlass can result from a/an _____.	overload on the pump motor	low fluid level in the reservoir	low fluid viscosity around the shaft seal	high oil level in the sump	
11	1130	C	According to Coast Guard Regulations (46 CFR), which of the following statements is correct regarding the steering apparatus requirements for a vessel over 250 feet in length?	Hydraulic structural rudder stops are mandatory.	On hydraulic type steering gears, a suitable arrangement of check valves in the main piping system may be considered as a means of steadying the rudder.	A separate auxiliary means of steering is not required where the main gear is of the dual power hydraulic type, having two independent pumps and connections.	All of the above.	

11	1131	B	A dirty intercooler on the ship service air compressor will result in _____.	decreased compression ratio	higher than normal power consumption	unloader malfunction	water in the lubricating oil	
11	1132	B	Which of the listed conditions will cause the feed water, that has not flashed to vapor in the first-stage of a flash evaporator, to flow into the second-stage?	Gravity siphon effect	Higher vacuum in the second-stage	Difference in brine density between first and second stages	Lower pressure in first-stage	
11	1134	B	In a refrigeration system, the heat normally producing the flash gas at the thermostatic expansion valve, is obtained from _____.	the hot gas bypass connection at the threeway valve	the portion of liquid refrigerant which does not flash	exposure to the high ambient temperature within the coil	exposure to the high ambient temperature of the cooled space	
11	1135	B	Sealing lines provide sealing liquid flow to the stuffing box of a centrifugal pump _____.	to prevent seawater from passing out the stuffing box when a high suction head is present	to cool the shaft	in place of mechanical seals	in place of lantern rings	
11	1136	B	A twist drill gage can be used to measure the drill's _____.	length	diameter	clearance angle	web thickness	
11	1137	D	Under normal operating conditions, the highest temperature and pressure conditions existing for flash-type evaporators will occur in the _____.	first stage	second stage	brine pump discharge	salt water feed heater	
11	1138	C	An axial piston hydraulic motor is caused to rotate by fluid flow from a comparably designed variable displacement pump fitted with the illustrated device. If the motor stalls, due to excess load, the pump tilting box will seek neutral stroke until the high side pressure equalizes or is less than the set point pressure established by part _____.	A	E	I	J	GS-0040

11	1139	B	A 30 HP electric motor is rotating shaft "A" at 300 rpm. What is the horsepower and rpm at shaft "B", if the efficiency of the spur gears is 67%?	20 H.P. at 200 RPM	20 H.P. at 900 RPM	30 H.P. at 100 RPM	30 H.P. at 900 RPM	GS-0136
11	1140	D	Electric and electro-hydraulic steering gear motors are required by Coast Guard Regulations (46 CFR) to be _____.	protected by a circuit breaker set at 125% and a thermal overload device	provided with a running motor overcurrent protection device	served by a single two conductor cable	served by two feeder circuits	
11	1141	B	A dirty intercooler on an air compressor will cause _____.	damage to the unloader operating diaphragm	an increase in current flow to the motor	high pressure in the receiver and refrig-a-filter	an excessive consumption of crankcase oil	
11	1142	A	Which of the following actions should be taken if during a routine maintenance inspection of a centrifugal pump, localized scoring on a pump shaft sleeve is detected?	Correct the cause of the scoring and repair the sleeve or replace with a new one.	Reassemble the unit and provide more water leak off for proper lubrication.	Check for parallel alignment of the sleeve radial faces to the sleeve bores.	Reassemble the unit and adjust the governor to obtain a slower speed.	
11	1143	C	Which of the metals listed below can be cut with the highest operating lathe speed?	Cast iron	Mild steel	Aluminum	Soft brass	
11	1144	C	High vapor superheat in a refrigeration system, may be caused by a/an _____.	increased capacity of the compressor	more efficient operation of the thermal expansion valve	decreased capacity of the compressor	loss of receiver capacity	
11	1145	C	In a two-stage flash-type evaporator, excess brine in the first stage automatically passes _____.	directly to the second stage feed heater	directly overboard through the brine cooler	into the second stage flash chamber	into the second stage vapor condenser	
11	1146	B	The drill size is marked on the _____.	point	shank	margin	flute	

11	1148	A	A variable displacement pump is fitted with the illustrated device, the discharge flow rate will be reduced as described by which of the following statements?	Part "H" will move to block the replenishing pump oil flow across part "G" as flow across hydraulic motor decreases.	When part "D" rotates counterclockwise, part "E" will rotate clockwise allowing part "G" to slide towards the set point spring 'F.'	As high side pressure increases part "A", "B", and "C" will work together to reestablish the original tilting box angle.	The increase in high side pressure will gradually increase the tilting box angle of the variable displacement pump.	GS-0040
11	1149	C	Coast Guard Regulations (46 CFR) for materials, design, and construction of main propulsion machinery state that design standards shall be at least equivalent to the standards of the _____.	American Society of Mechanical Engineers (ASME)	American National Standards Institute (ANSI)	American Bureau of Shipping (ABS)	American Society for Testing and Materials (ASTM)	
11	1150	A	Coast Guard Regulations (46 CFR) require that electric and electro-hydraulic steering gear motors shall be _____.	served by two electric power feeder circuits	provided with a motor running overcurrent protection device	protected by a circuit breaker and a thermal overload device	served by a single two conductor cable	
11	1151	D	Excessive lube oil consumption by a reciprocating air compressor can be caused by _____.	increasing the operating pressure differential	using oil having an excessive viscosity	intercooler or aftercooler leaks	carrying the oil level higher than normal	
11	1152	D	The total length of stroke in a reciprocating steam pump can be adjusted by _____.	increasing or decreasing the number of packing rings around the piston rod	variations in the throttle adjustment	twisting the stayrod in a clockwise direction	changing the setting of the tappet collars on the pilot valve operating rod	
11	1153	B	Which of the following statements best defines 'depth of cut' in lathe work?	The distance to tool point advances with each revolution of the work.	The distance from the bottom of the cut to the uncut surface of the workpiece.	The distance the workpiece circumference moves past the cutting tool point in 1 minute.	The chip length that will be removed from the work in 1 minute.	
11	1154	B	In which of the listed refrigeration system components does superheating of the refrigerant take place?	Expansion valve	Evaporator	Drier	Receiver	

11	1156	A	With regards to the diaphragm controlled, internally piloted, steam pressure reducing valve illustrated, as the _____.	outlet pressure drops, the valve stem will move down	outlet pressure drops, the valve stem will move up	diaphragm ruptures, the valve will close	adjusting spring is compressed further, outlet pressure will decrease	GS-0054
11	1157	C	The vacuum maintained in the salt water feed heater shell of a flash-type evaporator is generally accomplished by _____.	a separate air ejector unit	a direct unimpeded connection between second stage and salt water feed heater	by an external line from the first stage via a fixed orifice	the fixed orifice provided in the steam supply line	
11	1158	C	In the device illustrated, if part "D" rotates clockwise then part "E" will rotate _____.	counterclockwise and act upon part "H"	clockwise and act upon part "H"	counterclockwise and act upon part "G"	clockwise and act upon part "G"	GS-0040
11	1159	D	Sounding tubes and access openings for fuel oil tanks on cargo vessels are permitted by Coast Guard Regulations (46 CFR) to be located in which of the listed spaces?	Washrooms	Laundries	crew lounge	none of the above	
11	1160	B	An electric driven steering gear power unit is required by Coast Guard Regulations (46 CFR) to be capable of putting the rudder over from 15° on one side to 15° on the other side in not more than 60 seconds under emergency power with the vessel running ahead. For a 20 knot vessel, this test must be carried out at _____.	7 knots	10 knots	15 knots	20 knots	
11	1161	C	Excessive lube oil consumption in a reciprocating air compressor is an indication of _____.	leakage in the aftercooler	leakage in the intercooler	worn or broken piston rings	defects in the high pressure unloader	
11	1162	C	Which of the lubricants listed is the best to use on a reciprocating pump rod?	Engine oil.	Oil mixed with kerosene.	Graphite and oil.	Vegetable oil.	
11	1163	C	When stock is being turned down on a lathe, the outside diameter is reduced by an amount equal to _____.	the depth of cut	one half the depth of cut	twice the depth of cut	twice the rate of feed	

11	1164	D	In a refrigeration system, the amount of refrigerant admitted to the evaporator is directly related to _____.	the compressor discharge pressure	condenser cooling water temperature	the solenoid valve differential pressure	the superheat of the refrigerant in the tail coil	
11	1165	A	If the distillate temperature from a flash type evaporator falls below 160°F _____.	the distillate may be directed to the storage tanks	the automatic three-way solenoid dump valve should direct distillate to the bilge	the demisters will become scaled	priming will occur in the first-effect	
11	1166	C	If the drill point lips are of unequal length, the drill will wobble and _____.	cut a continuous chip	jam in the hole and break	cut an oversized hole	overheat rapidly from rubbing	
11	1167	A	The absolute pressure maintained in the shell of the salt water feed heater on most flash evaporators used on steam propelled vessels is _____.	slightly less than the absolute pressure of the L.P. extraction	slightly less than the supplied live steam pressure at the reducing valve outlet	slightly higher than the second stage vacuum	slightly lower than the first stage vacuum	
11	1169	B	The U.S. Coast Guard requires that a Form CG 2692 'Report of Marine Accident, Injury or Death' be filed with the Officer in Charge, Marine Inspection when _____.	a shipyard worker breaks his leg due to the failure of the engine room gantry supporting the turbine	a crew member falls while at sea and requires two and a half days bed rest to recover	a harbor worker carrying a heavy piece of gear drops it on his foot and as a result is out of work for 2 months	all of the above statements are true	
11	1170	B	According to Coast Guard Regulations (46 CFR), a power driven auxiliary steering gear for a vessel capable of a 20 knot service speed, must be capable of producing a rudder movement at which of the minimum speeds listed below?	7 knots	10 knots	15 knots	20 knots	
11	1171	D	Which of the following statements is true concerning V-belt drives for reciprocating air compressors?	Belts generally stretch slightly during the first few months of use.	An excessively tight belt will overload the bearings.	A loose belt will slip on the motor pulley and wear rapidly.	All of the above.	

11	1173	B	If you are cutting off a piece of stock in a lathe and the work piece tends to climb over the top of the cutoff tool, you should _____.	increase the lathe spindle speed	increase the height of the tool cutting edge	stop the lathe and tighten the chuck	stop the lathe and lubricate the dead center	
11	1174	A	The refrigerant gas returning to the compressor should be _____.	superheated	saturated	dense	flooded	
11	1175	B	The distillate produced by a flash evaporator has a salinity of 0.21 grains per gallon, with a feed water temperature entering the first-stage of the evaporator at 170°F. Under these conditions the three-way solenoid valve will _____.	direct distillate to the bilge	direct distillate to the freshwater tanks	recirculate distillate to the first-stage feed inlet	recirculate distillate to the distiller saltwater heater	
11	1176	B	On a multistage flash-type evaporator, the flash chamber is _____.	combined as part of the salt water feed heater	the open area above the brine levels in the first and second stages	combined as part of the distillate cooler	another term used to describe the vapor feed heater	
11	1177	B	The heated feed water entering any flash chamber of a flash-type evaporator will _____.	vaporize, with the unflashed water remaining at the temperature at which it entered the flash chamber	vaporize, with the unflashed water equalizing to the saturation conditions existing in the flash chamber	vaporize, with the remaining water at a temperature greater than it entered the flash chamber	boil, allowing steam bubbles to rise through the brine at the bottom of the flash chamber	
11	1178	C	If the device shown in the illustration is used to control the output of a variable displacement pump, and part "A" is displaced 50% from 'zero' stroke, which of the following statements will be correct?	Pump discharge will be 100% until the effects of lost motion in the associated linkages is eliminated.	Once the pump achieved a corresponding output of 50%, the pump would automatically return to neutral stroke.	The pump would develop a 50% discharge rate and remain at that condition until the control handle position is changed.	The system unloading valve will open to guarantee a pump discharge of no more than 50%.	GS-0039
11	1179	D	Coast Guard Regulations (46 CFR) require tank sounding tubes terminating above the weather deck of a cargo vessel to be fitted with a _____.	globe valve	stop-check valve	gate valve	screw cap or plug	

11	1180	B	According to Coast Guard Regulations (46 CFR Part 58), a power driven auxiliary steering gear for a vessel capable of a 12 knot service speed, must be able to meet the rudder movement requirements at which of the minimum vessel speeds listed below?	6 knots	7 knots	9 knots	12 knots	
11	1181	B	If the electric motor driving an air compressor fails to start, the cause may be a _____.	leaking unloader	tripped circuit breaker	control line leak	defective pop valve	
11	1182	C	If you determine that a steam reciprocating pump is operating with too long of a stroke, causing the piston nut to strike the cylinder head, you should _____.	completely open the steam cushioning valves	install a smaller nut on the piston rod	adjust the valve gear to manufacturer's specified measurements	install a shorter piston rod	
11	1183	B	When steel, cast iron, or other metals with surface scale are being turned, the first roughing cut should be taken _____.	slowly to prevent tool chatter	deep enough to get under the scale	lightly to avoid dulling the tool	rapidly in a continuous chip	
11	1184	A	The low pressure side of a refrigeration system is considered to exist from the _____.	expansion valve to the compressor	receiver to the expansion coil	expansion valve to the evaporator	condenser to the expansion valve	
11	1185	C	In the event of a power failure to the salinity panel on a flash-type evaporator, the three-way solenoid valve will _____.	be frozen in its last position	direct distillate to the fresh water tank	dump distillate to the bilge	dump distillate to the makeup feed tank	
11	1186	B	Positive displacement, helical gear pumps are well suited for pumping oil because _____.	stuffing boxes eliminate the leakage problems usually associated with other gear pumps	helical gear pumps are essentially self-priming and produce high suction lift	closely maintained design clearances in this pump is not necessary	helical gear pumps are designed with extreme tooth angles	
11	1187	B	Scale formation in a flash-type evaporator is usually found in the _____.	flash chamber walls	tubes of the salt water feed heater	tubes of the air ejector condenser	tubes of the distiller condenser	

11	1188	B	If the device shown in the illustration is being used to control the output of an axial piston pump, when part "A" is moved to the right, then part "B" _____.	will move to the right, and "C" will move to the left, but lagging behind "B"	will move to the left, and "C" will move to the right, but will lag behind the movement of "A"	will move to the right, as will "C"	will move to the left, as will "C"	GS-0039
11	1189	B	In accordance with Coast Guard Regulations (46 CFR), a written report must be submitted to the Officer in Charge, Marine Inspection whenever a vessel casualty or serious injury occurs. Which of the following must be submitted on Form CG-2692?	A shipyard worker accidentally falls down a ladder and breaks a leg.	A boiler water carryover results in extensive main turbine blading damage.	A QMED falls and requires 2.5 days bed rest to recover.	All of the above situations.	
11	1190	A	Coast Guard Regulations (46 CFR) require hydraulic steering gear systems to be equipped with a means of steadying the rudder in an emergency. This may be accomplished with _____.	a suitable arrangement of stop valves in the main piping	a positive arrangement for stopping the rudder before the rudder stops are reached	a suitable arrangement of block and tackle powered by winches	buffer arrangements to relieve the gear from shocks to the rudder	
11	1191	B	After disassembly, the safest way to remove carbon deposits from air compressor inlet and discharge valves is to use _____.	ammonia	diesel oil	gasoline	naphtha	
11	1192	C	In a water cooled stern tube, a slight leakage of water across the packing gland is provided to _____.	flush all dirt and grit from the gland	flush all dirt and grit from the bearing staves	keep the gland packing cool	keep the stern tube fair water cool	
11	1193	A	If the distances "A" and/or "B" as shown in the illustration are excessively increased, the tool will _____.	chatter	take a shallow cut	slip in the tool post	take a deeper cut in the work	GS-0085
11	1194	D	The component of a refrigerating system in which the refrigerant vaporizes and absorbs heat is known as the _____.	condenser	vapor generator	accumulator	evaporator	
11	1195	D	In which of the areas listed would you expect to find the highest salt concentration in a flash evaporator?	Distiller air ejector cooling medium	Saltwater heater discharge	First-stage internal feed box	Second-stage internal feed box	

11	1196	D	Item "F" shown in the illustration represents two hydraulic pumps that are _____.	motor operated with one pump located on the engine room side and the other on the shaft alley side of the water tight door	motor operated with one pump located in the engine room at the shaft alley door and the other in a common passage way	manually operated with one pump located at the shaft alley door and the other in a common passage way	manually operated with one located in the engine room and the other in the shaft alley of the water tight door	GS-0103
11	1197	B	The flash chamber of a soloshell evaporator is typically an external chamber used for the combining of the distillate produced at two different absolute pressures. On a multistage flash-type evaporator, the flash chamber is _____.	combined as part of the salt water feed heater	the open area above the brine levels in the first and second stages	combined as part of the distillate cooler	another term used to describe the vapor feed heater	
11	1198	C	The basic function of a servo control shown in the illustration, as used in some hydraulic systems, is to _____.	establish minimum operating pressures within the system	establish minimum operating flow rates within the system	provide follow-up between the directional control valve and the pump output	return a variable displacement pump automatically to neutral stroke	GS-0039
11	1199	B	Coast Guard regulations (46 CFR) require the upper ends of sounding tubes, terminating at the weather deck, to be closed by a _____.	quick-closing valve	screwed cap	globe valve	self-closing gate valve	
11	1200	A	An AC synchronous transmission type remote steering control system consists of a _____.	transmitter at the steering station and a receiver at the steering engine	reversible motor at the steering station geared to the steering pumps	small induction motor on the bridge which controls the rudder through pulleys	variable displacement hydraulic pump driven by a reversible DC motor	
11	1201	B	The main bearings of a reciprocating air compressor are tapered roller bearings. When mounted, these bearings are given a 'cold' end clearance to _____.	allow for crank web deflection	allow for longitudinal expansion of the crankshaft as the unit warms up	prevent longitudinal thrust in the crankshaft	reduce torsional vibration in the crankshaft	

11	1202	C	Generally speaking, when using a twist drill to bore a hole in metal, the harder the metal, the greater should be the drill's _____.	diameter	lip clearance	included point angle	cutting speed	
11	1203	C	To operate a centrifugal fire pump at reduced capacity, you should _____.	readjust the relief valve	throttle the suction line	throttle the discharge valve	open the priming line	
11	1204	A	Which of the following best describes the thermodynamic effect on the pressure and volume relationship with regards to saturated gases?	As pressure decreases, volume increases	As volume increases, pressure increases	As volume decreases, pressure decreases	As pressure increases, volume increases	
11	1205	B	Steam supply for the operation of the low pressure evaporators may be obtained directly from the _____.	main steam line	turbine extraction line	turbo-generator steam supply line	air ejector exhaust line	
11	1206	C	The fluid used to directly control the position of the refrigeration compressor mechanism illustrated, is obtained from the _____.	high side liquid receiver	gas discharge from the compressor	discharge of the compressor lube oil pump	discharge of a secondary hydraulic pump specifically installed for this operation	RA-0013
11	1207	D	The brine level in the second-stage of a flash-type evaporator is determined in part by the feed rate, the rate of evaporation in both stages, and the _____.	steam flow rate to the air ejectors	float controlled level of the feed heater	capacity of the distillate pump	throughput of the brine overboard pump	
11	1209	D	Coast Guard Regulations (46 CFR) require that tank sounding pipes terminating below the freeboard deck of a cargo vessel must be fitted with a _____.	globe valve	stop-check valve	check valve	gate valve	
11	1210	A	Any restriction in the instrument air piping of a pneumatic control system will _____.	delay transmission of the air signal	increase the transmitted air signal intensity	reduce the transmitted air signal value	accelerate transmission of the air signal	
11	1211	B	If one drive belt on an air compressor is found to be worn you should _____.	replace that belt only	replace all of the belts	dress the worn belt	adjust belt tension	
11	1212	A	The discharge rate or capacity of a centrifugal pump will vary directly as the _____.	change in the impeller diameter	square of the impeller radius	cube of the impeller diameter	impeller efficiency for large changes in its size	

11	1213	B	If you are machining work held between lathe centers, and the lathe centers begin to squeal, you should first _____.	lubricate the centers	stop the lathe	change the cutting bit	run the lathe at a slower speed	
11	1214	B	The term 'oil foaming' in refrigeration practice, is used to describe the _____.	release of dissolved lubricant from the refrigerant in the crankcase	release of miscible refrigerant from the lubricant in the crankcase	sudden evaporation of entrapped air from the refrigerant liquid	sudden evaporation of entrapped moisture from the crankcase lubricant	
11	1215	B	Where auxiliary steam supply is not used in the process of maintaining vacuum in a distilling unit, the vacuum is usually attained by _____.	air operated air ejectors	eductor pumps	increasing the rate of condensation in the distiller condensers	a separate suction connection to the brine overboard pump	
11	1216	B	When operating with a negative suction head, which of the following types of pumps will require priming?	Reciprocating	Centrifugal	Rotary	Gear	
11	1217	C	Early models of the flash-type evaporators used a pump to drain condensate from the salt water feed heater. In more recent models this is commonly carried out by _____.	the use of an attemporator	gravitating the condensate to the DC heater	vacuum drag to the auxiliary or main condenser	the use of a loop seal to the combined low pressure feed heater	
11	1218	B	Which of the listed pressure-control valves is used in a hydraulic system to prevent the stray movements of a vertical load until required?	Pressure reducing valve	Counterbalance valve	Unloading valve	Sequence valve	
11	1219	B	A saltwater leak shorts out your switchboard causing a fire which does $(USA)27,500 damage to the electrical equipment. This must be reported to the _____.	insurance underwriter	U.S. Coast Guard	harbormaster	port engineer	
11	1220	A	A Bourdon tube pressure gage is protected from the effects of the steam entering the pressure element by a/an _____.	exposed, uninsulated coil in the line leading to the gage	impulse-type steam trap in the gage line	leather or neoprene diaphragm in the gage line	spring loaded bellows in the gage line	
11	1221	B	If the drive belts on an air compressor were squealing, you should fix them by _____.	spraying oil on the belts	tightening the belts	loosening the belts	installing wider belts	

11	1223	A	One method of accurately checking the alignment of lathe centers is by moving a dial indicator, securely mounted on compound rest, between the two positions indicated on the test bar. If the dial indicator reading on the tailstock end of the test bar shows a higher (plus) reading than the dial indicator reading at the headstock end, you should move the tailstock _____.	away from you to correct alignment	toward you to correct alignment	closer to the headstock to reduce offset	away from the headstock to decrease misalignment	GS-0141
11	1224	D	The refrigerant leaves the evaporator of a refrigeration system as a low pressure _____.	subcooled liquid	high temperature liquid	oil saturated liquid	superheated vapor	
11	1225	A	The purpose of a three-way, solenoid, dump valve on an evaporator is to _____.	prevent excessively saline distillate from entering the freshwater system	drain the evaporator first-effect only	drain the evaporator second-effect only	allow the evaporator's first- and second-effects to be drained with one valve	
11	1226	A	Reduced capacity, accompanied by vibration and noise at the suction of a centrifugal pump is a result of _____.	cavitation	water hammer	fluid friction	steam knock	
11	1227	D	The size of the loop seal orifice for a flash-type evaporator is important for maintaining the control of _____.	the vacuum differential developed between both stages	the absolute pressure differential developed between both stages	the absolute pressure developed in the salt water feed heater shell	maintaining distillate flow between the first and second stage in order to avoid dry seal operation of the loop	
11	1228	C	Which of the listed pressure control valves would be used to permit the completion of one action of a hydraulic system before a second action would be permitted?	Counterbalance valve	Unloading valve	Sequence valve	Pressure-reducing valve	
11	1229	C	A measurement of .625 inches is equal to _____.	15/32 inches	9/16 inches	5/8 inches	35/64 inches	

11	1230	C	In order to accurately measure very low positive pressures, which of the instruments listed should be used?	Compound gage	Bourdon tube	Manometer	Deadweight gage	
11	1231	C	Which of the following components listed is shown in the illustration?	Heat exchanger	Variable displacement pump	Filter	All of the above	GS-0041
11	1232	C	During operating periods of a multi-box refrigeration system using a capacity controlled compressor, when all of the boxes are actively being cooled, the compressor lube oil pressure at point "P-1" should be _____.	the lowest	at its mid-range	the highest	of no consequence as the lube oil is not used in the operation of the unloader	RA-0013
11	1233	A	A work piece has been mounted between centers and a test cut machined at each end to check alignment of the lathe centers. If the test cut on the tailstock end is deeper than the test cut on the headstock end, the tailstock must be moved _____.	away from you to correct alignment	toward you to correct alignment	closer to the headstock to reduce the amount of offset	away from the headstock to decrease the misalignment	
11	1234	D	The low pressure side of the refrigeration system, shown in the illustration, is located between components _____.	G and J	D and K	D and 1	6 and G	RA-0012
11	1235	A	A solenoid-operated distillate three-way valve is installed in the discharge line between the distilling plant and the potable water tanks. This valve will trip and dump the distillate discharge if the _____.	distillate salinity is excessive	distillate temperature is excessive	potable water tank has been filled with raw water	potable water tank has become contaminated	
11	1236	C	If a centrifugal bilge pump were continually operated with the discharge valve closed the _____.	motor overload would open	relief valve would open	pump would eventually overheat	motor would overheat	
11	1238	D	Which of the listed pressure control valves would be used to establish the maximum operating pressure of a hydraulic system?	Pressure-reducing valve	Unloading valve	Counterbalance valve	Pressure-relief valve	

11	1239	B	Coast Guard Regulations (46 CFR) define several acceptable means of closure for ballast and fuel oil tank vents. One of the acceptable means is by the use of a/an _____.	manually operated ball check valve	automatically operated hinged closure	permanently installed canvas hood	corrosion resistant wire screen	
11	1240	B	The device shown in the illustration is an example of a simple _____.	Bourdon tube gauge	U-tube manometer	bridge gauge	hydrometer	GS-0115
11	1241	D	Before disconnecting a joint in a pipeline, you should _____.	determine the size of the gasket	hang a bucket under the joint	have a first aid kit on hand	be sure no pressure exists in the line	
11	1242	C	The neutralization number of lube oil used in the machinery has exceeded its permissible range, therefore, it will be necessary to _____.	centrifuge the oil	add makeup oil	renew the entire oil supply	operate the machinery at reduced power	
11	1243	B	For proper support when turning a long thin piece of work between lathe centers, you should use a _____.	faceplate	steady rest	draw-in collet chuck	compound rest	
11	1244	D	The refrigerant temperature is highest as shown in the illustration at point _____.	4	6	13	16	RA-0012
11	1246	B	A centrifugal pump operating against a closed discharge valve has a/an _____.	capacity of 100%	efficiency of 0%	internal slippage of 0%	shut off horsepower rating of 100%	
11	1247	A	While in operation, the function of the orifice in the flash evaporator loop seal is to _____.	maintain the absolute pressure difference between the first and second stages	allow vacuum to be drawn from the first stage shell to the second stage shell	allow vacuum to be drawn from the second stage shell to the first stage shell	aid in maintaining the difference in absolute pressure between the second stage shell and the salt water feed heater	
11	1249	C	A water line ruptures under pressure and floods the engine room causing $(USA)30,000 damage to the machinery. By law, this must be reported to the _____.	engine manufacturer	owner or his agent	U.S. Coast Guard	insurance underwriter	

11	1250	B	Which of the gage types listed is shown in the illustration?	Duplex Bourdon tube type	Simplex Bourdon tube type	Duplex differential pressure type	Duplex compound type	GS-0114
11	1251	A	Joints in pipelines must be properly aligned before they are connected because _____.	excessive strain on the joints will result if they are misaligned	misalignment permits excessive expansion	the pipe will be completely blocked by even the slightest amount of misalignment	condensate accumulates rapidly when flanges are not properly aligned	
11	1252	C	According to Coast Guard Regulations (CFR 46), carbon steel bolt studs may be used to make up a flange if the normal operating _____.	temperature does not exceed 450°F (232°C)	temperature does not exceed 500°F (260°C)	pressure does not exceed 300 psi (21.09 kg/cm2)	pressure does not exceed 350 psi (24.61 kg/cm2)	
11	1253	B	The lathe steady rest is normally used for supporting one end of a _____.	short heavy casting held in a three jaw chuck	long workpiece for facing, drilling, and boring	short workpiece being machined to an internal taper	tubular workpiece being parted between centers	
11	1254	A	The temperature of a refrigerant gas is the highest _____.	at the compressor discharge	at the compressor suction	in the expansion valve	in the receiver	
11	1255	D	Condensate formed within the tubes of the first-effect submerged tube nest of a double-effect, low pressure evaporator, is removed by a _____.	series of baffles	crossover pipe	condensate separator	drain pump	
11	1256	A	A centrifugal pump attempting to develop flow against a closed discharge valve has a/an _____.	capacity of 0%	efficiency of 100%	internal slippage of 0%	shut off horsepower rating of 100%	
11	1257	B	The function of the loop seal, as typically provided on a flash type evaporator, is to _____.	aid in establishing a vacuum in the first stage via the second stage	transfer the distillate produced in the first stage to the second stage	aid in establishing a vacuum in the second stage via the first stage	aid in developing a vacuum in the shell of the salt water feed heater	

11	1259	A	A fuel oil settler is 35 feet 4 inches long, 25 feet 10 inches wide, and 19 feet deep. The noon sounding showed a level of 15 feet 2 inches. The oil meter reads 6517 at that time and 8911 at 1600. How many barrels of fuel oil remained in the settler at 1600?	2,408.69 bbls	3,031.88 bbls	3,235.79 bbls	3,763.12 bbls	
11	1260	C	A compound gage is used to measure _____.	temperature and pressure	humidity and temperature	pressure and vacuum	pressure and humidity	
11	1261	A	Before making up a flanged joint, you should _____.	be certain that the flanges line up squarely	cut grooves in the flange face with a chisel	heat the pipeline to expand the bolt holes	have a second spare gasket on hand	
11	1262	D	Coast Guard Regulations (46 CFR) require that screw joints shall not be used in piping systems where severe erosion, crevice corrosion, shock, or vibration is expected to occur, nor at temperatures over _____.	450°F	650°F	825°F	925°F	
11	1263	C	If you are taking a roughing cut on a steel work piece in a lathe and see blue chips coming off that work piece, you should _____.	decrease the flow of lubricating oil to the tool	reduce the cutting tool height above center	reduce the tool feed or depth of cut	decrease the cross compound speed	
11	1264	C	Which of the listed components is considered to separate the high pressure side of a refrigeration cycle from the low pressure side of the cycle?	The condenser and the expansion valve	The king valve and the solenoid valve	The compressor and the expansion valve	The condenser and the solenoid valve	
11	1265	D	Fluctuations in the pressure and temperature of the steam supplied to the first-effect of a low pressure distilling plant will cause _____.	increased heat levels throughout the entire unit	decreased priming and lower distillate salinity	first effect scale formation to be lessened	pressure and temperature fluctuations in the entire unit	
11	1266	A	If a centrifugal pump operating with a positive suction head becomes air bound, your FIRST response should be to _____.	vent the casing	close the discharge	tighten the packing	reprime the pump	

11	1267	B	If 'wet' steam is supplied to the air ejectors of a low pressure evaporator, the passage of the mixture through the nozzles will _____.	improve overall vacuum	cause the potential level of kinetic energy to be partially converted to thermal energy	cause the existing level of thermal energy to be totally converted to kinetic energy	cause the level of thermal energy to be converted to potential energy	
11	1269	A	When installing a new independent fuel tank for the emergency lighting generator, which of the following statements must be strictly adhered to in accordance with Coast Guard Regulations?	The tank must be located on an open deck or in an adequately ventilated metal compartment in which the ambient temperature never exceeds 150°F.	Iron or steel tanks shall be galvanized on the interior to prevent the formation of rust if any condensation should occur.	The fuel tank shall be insulated from the vessel's common ground to insure against static electricity hazards.	All of the above.	
11	1271	D	When assembling a run of liquid service piping, which of the following factors should be considered?	How the type of fittings used will affect the flow.	What type of gasket material should be used.	What radius should be used for each bend in the run.	All of the above.	
11	1272	C	When a vessel is drydocked for inspection, which of the following valves are required to be opened during this period?	Ballast pump manifold valves	High and low suction valves on fuel oil settling tanks	Bottom blow skin valves to the main and auxiliary boilers	Cooling water control valves on refrigeration condensers	
11	1273	D	When knurling a piece of work on a lathe, it is important to _____.	operate the lathe at the slowest speed	use plenty of oil	mount the knurling tool securely in the tool post	all of the above	
11	1274	D	Which of the listed refrigeration system components keeps the refrigerant circulating through the system?	Expansion valve	Condenser	Evaporator	Compressor	
11	1275	D	The efficiency and output capacity of a low pressure distilling plant will be reduced if the last effect shell _____.	pressure does not fluctuate rapidly	pressure remains steady and unchanged	brine density does not exceed 1.5/32nd	brine density is too low	

11	1276	C	If a horizontal centrifugal pump becomes air bound, the pump should be vented at the _____.	suction line	discharge flange	top of the volute	bottom of the casing	
11	1277	B	Item "E" shown in the illustration is used in the hydraulic circuit as _____.	one of two motor driven remotely operated pumps to open and close the water tight door	the manually operated pump located in a common passage way to close the water tight door in an emergency	motor driven pump used to close the water tight door from the navigation bridge in an emergency	the manually operated pump used to open or close the water tight door from the engine room side	GS-0103
11	1278	B	Which of the valves listed is NOT considered to be a hydraulic system directional control valve?	Spring-centered valve	Unloading valve	Three-position valve	Two-position valve	
11	1279	D	A fuel oil settler is 35 feet 4 inches (10.7696 m) long, 25 feet 10 inches (7.8740 m) wide, and 19 feet (5.7912 m) deep. The noon sounding indicated a level of 15 feet 2 inches (4.6228 m). The fuel oil meter read 6517 (24669) at that time and 8911 (33732) at 1600. How many barrels / cubic meters of fuel oil remained in the settler at 1600?	127,338.99 bbls (20245.24 cubic meters)	101,164.79 bbls (16083.87 cubic meters)	3,031.99 bbls (482.05 cubic meters)	2,408.69 bbls (382.95 cubic meters)	
11	1280	B	A compound Bourdon tube gage is capable of measuring pressure and _____.	humidity	vacuum	temperature	density	
11	1281	A	One function of the vapor feed heater in a double-effect submerged tube distilling unit is to _____.	condense part of the vapor given off in the first-effect	preheat distillate circulating to the second-effect tube nest	cool the incoming first-effect evaporator feed	condense all the distillate in the second-effect tube nest	
11	1282	D	Antifriction bearings should not be excessively lubricated because _____.	the bearings will require immediate flushing	dirt will accumulate inside the bearings	excess lubrication will result in slippage	the bearing will overheat	
11	1284	A	Excessive oil foaming in the crankcase of a refrigeration compressor at start up can cause _____.	compressor damage from improper lubrication	refrigerant absorption by the lubricant	increased viscosity in the lubricant	carbon deposit on the compressor suction valves	

11	1285	D	During the normal operation of a soloshell double-effect unit, the vapor passes through the first-effect vapor separator on its way to the vapor feed heater. At this point in the cycle, what is flowing through the tubes of the vapor feed heater?	Pure distillate	Brine	Condensed vapor from the second-effect	Salt water feed	
11	1286	A	Which of the listed statements is correct concerning the starting of centrifugal boiler feed pumps?	They should always be started with the discharge valve closed.	They should always be started with the suction valve closed.	A priming pump is always required to flood the impeller suction.	They should always be started with the sealing line valves closed.	
11	1287	D	For optimum noncondensable gas removal from a low pressure evaporator, the air ejector suction is usually taken directly from _____.	the salt water feed heater shell	anywhere on the second stage shell of the evaporator	the shell of the first stage distilling condenser	the shell of the second stage distilling condenser	
11	1288	A	Which of the valves listed is NOT considered to be a hydraulic system directional control valve?	Sequencing valve	Two-position valve	Three-position valve	Spring-centered valve	
11	1289	D	An air tank rusts out, explodes, and causes in excess of $(USA)24,000 damage to the engine room. By law, this accident must be reported to the _____.	owner or his agent	insurance underwriter	air tank underwriter	U.S. Coast Guard	
11	1290	A	A compound gage is typically installed on the _____.	suction side of a bilge pump	exhaust manifold of an auxiliary diesel	discharge line from an air compressor	chemical feed tank of an evaporator	
11	1291	B	From where does the air ejector take its suction on a Soloshell double effect distilling unit?	First Effect vapor feed heater	Second Effect distilling condenser	Vapor separator	Flash chamber	
11	1292	C	An overboard discharge is 10 inches in diameter and located outboard of the shut off valve. The pipe is required to be fabricated of schedule _____.	40 minimum thickness	40 minimum thickness if black iron is used	60 minimum thickness	80 minimum thickness	
11	1293	B	Work that cannot readily be mounted between lathe centers is usually held in a _____.	crotch center	chuck	lathe dog	spindle	

11	1294	A	The refrigeration system shown in the illustration uses which of the components listed to separate the 'high' side from the 'low' side?	G and K	G and H	H and K	K and L	RA-0012
11	1295	C	In a double-effect distilling unit, the brine in the second-effect is additionally heated by _____.	auxiliary steam	air ejector steam	distillate/vapor from the first effect	flash chamber leak off	
11	1296	C	When securing a distillate pump on a low pressure fresh water evaporator, which of the listed steps should be carried out FIRST?	Stop the pump.	Close the pressure gage valves.	Trip the three-way solenoid dump valve.	Close the sealing line valves to the pump.	
11	1297	D	A vacuum is initially established in the first and second stages of a low pressure evaporator by the use of _____.	vacuum drag from the auxiliary condensate system	individual vacuum pumps	a single non-condensing air ejector	a two stage air ejector	
11	1299	A	The disc of a relief valve has an area of 0.85 square inches when seated, lifts at a set point pressure of 250 psi. When the valve lifts, the area of the disc exposed to pressure increases by 20%. At what pressure does the valve reseat?	208 psi	227 psi	231 psi	250 psi	
11	1300	C	The gage most commonly used aboard ship to measure high pressures is the _____.	volatile liquid-type	diaphragm actuated-type	Bourdon tube-type	resistance-temperature-type	
11	1301	D	The purpose of the flash chamber in a soloshell double effect distilling unit is to _____.	raise the temperature of the evaporator feedwater	prevent flashing at the suction of the brine pump	allow steam expansion within the first effect tube nest	collect and combine distillate formed at different pressures	
11	1302	A	The delivery rate of an axial piston hydraulic pump is controlled by varying the position of the _____.	tilting box	slide block	pintle	reaction ring	
11	1303	D	For boring holes in mild steel and general work, the correct included angle of a drill point is _____.	29°	45°	90°	118°	

11	1304	B	When refrigerant leaves the receiver, it flows next on to the _____.	evaporator coils	liquid strainer	compressor	condenser	
11	1305	D	The vapor separators installed in some distilling plants consist of several rows of vertical hooked vanes which remove entrained moisture from the vapor by _____.	directing the vapor through a fine metallic mesh	condensing water droplets on the metal vanes	trapping water droplets in the metallic mesh	abruptly changing the direction of vapor flow	
11	1307	C	Steam passing through the control orifice installed in the live steam supply to a low pressure evaporator will develop significant superheat as a result of _____.	attemporating conditioning	ebullient conditioning	adiabatic conditioning	effervescent conditioning	
11	1309	A	Coast Guard Regulations (46 CFR) specifically prohibit seats or disks in pressure vessel relief valves to be made of _____.	cast iron	bronze	brass	stainless steel	
11	1310	C	The type of gage most commonly used to measure pressure is the _____.	bimetallic type	diaphragm type	bourdon tube type	resistance-temperature type	
11	1312	A	In the illustration, control over the direction and quantity of fluid flow is attained by _____.	changing the eccentricity between the reaction ring and the cylinder block	moving the cylinder block off center from the reaction (floating) ring	varying the direction of rotation and speed of the prime mover	varying the prime mover direction of rotation and throttling pump output	GS-0059
11	1313	C	A depth of cut of 0.26 inch reduces the diameter on a work piece in a lathe by _____.	0.13 inch	0.26 inch	0.52 inch	0.63 inch	
11	1314	B	If condensation collects and drips off an evaporator coil, the temperature of the coil is _____.	a maximum of 21°F	above 32°F, but below the dew point	21°F but, above the dew point	below 32°F and below the dew point	
11	1315	A	In which of the listed types of evaporators is brine density control most important?	Soloshell low pressure	Flash type low pressure	Multiple effect flash type	Basket type evaporator	

11	1316	C	Which of the following statements is true concerning centrifugal pumps?	They are particularly suited for pumping high viscosity fluids.	They are started with the discharge valve opened.	The flow of liquid is developed by imparting energy due to the rotation of an impeller.	They are always mounted in a horizontal position.	
11	1317	B	When the steam leaving the control orifice of the live steam supply is not conditioned, the evaporator _____.	capacity will be increased	capacity will be decreased	salt water feed heater absolute pressure will decrease significantly	salt water feed heater absolute pressure will increase significantly	
11	1319	D	Which of the following statements concerning a vessel's Coast Guard Certificate of Inspection and associated inspections is correct?	Application may be made for inspection and issuance of a new Certificate of Inspection at any time during the period of validity of the current Certificate.	To prevent any delay, a temporary Certificate of Inspection may be issued pending delivery of the regular Certificate of Inspection upon completion of the inspection.	A reinspection of a vessel holding a valid two year Certificate of Inspection is normally conducted between the tenth and fourteenth months of inspection date.	All of the above.	
11	1320	A	A dial indicator is used to measure _____.	shaft eccentricity	positive readings only	scribed layout lines on vertical surfaces	torque of a shaft	
11	1321	C	Why is a self-sealing pump generally not satisfactory for service as a brine overboard pump?	Hot brine tends to form scale on the impeller peripheral edge.	Brine density at 1.5/32 cannot by maintained.	Hot concentrated brine tends to clog the sealing lines and gland seal rings.	Hot brine tends to clog the brine pump suction line strainer.	

11	1323	A	Two separate work pieces are to have a taper cut with the same taper per inch, using the offset tailstock method. After the first piece is completed, the tailstock offset must be changed if there is a change in the _____.	length of the workpiece	diameter of the workpiece	angle of the cutting tool	none of the above	
11	1324	A	Refrigerant is circulated through a refrigeration system by the _____.	compressor	condenser	expansion valve	evaporator	
11	1325	B	For efficient and proper operation, the brine density in a submerged tube evaporator should be maintained at _____.	3.5 pounds of salt per 32 pounds of water	1.5 pounds of salt per 32 pounds of water	1 pound of salt per 32 pounds of water to prevent excessive heat loss	1 pound of salt per 32 pounds of water to minimize excessive scale formation	
11	1326	D	In a centrifugal pump, the seal piping directs liquid from the discharge side of the pump to the _____.	packing gland	wearing ring	stuffing	lantern ring	
11	1327	B	Regarding the low pressure evaporator steam control orifice in the live steam supply line, the steam at the outlet of the orifice if not properly conditioned will be developed as _____.	desuperheated steam	superheated steam	saturated steam	poor quality steam	
11	1330	C	A pyrometer is generally used to measure _____.	grains of moisture per cubic foot of air	salinity concentration of condensate	stack temperature	level of a fluid in a tank	
11	1331	A	The distillate pump for a 12000 GPD evaporator, should be rated at a minimum of _____.	8.3 gpm	200 gpm	300 gpm	500 gpm	
11	1332	A	A stopper is inserted into the spout of a closed container in which water has been heated to a temperature of 212°F. If additional thermal energy is imparted, what changes will occur to the pressure and temperature inside the container?	both pressure and temperature will rise	pressure alone will rise	temperature alone will rise	only a change of state will occur	

11	1333	B	A tailstock 'dead center' has been given that name because it _____.	is dead centered on the tailstock spindle	does not revolve	must be removed by clamping in the chuck	fits into the dead center of the workpiece	
11	1334	A	The temperature of the refrigerant in the evaporator coil depends mostly upon the _____.	refrigerant pressure in the evaporator	cooling water temperature to the condenser	heat load in the refrigerator compartment	solenoid valve in the liquid line	
11	1335	C	Which of the following types of hydraulic pumps would be used in a steering system?	Lobe	Screw	Radial piston	Volute	
11	1336	D	The amount of the cushioning effect developed within a hydraulic cylinder is determined by the _____.	position of the directional port in the cushion cavity	adjustment of the cushion cavity check valve	design shape of the cylinder ends	setting of the cushioning adjustment needle valve	
11	1337	A	Which of the listed modes of controls will identify the device shown in the illustration?	Proportional-plus-reset control	Two position differential gap control	Single speed floating control	Derivative control	GS-0148
11	1338	C	The device shown in the illustration is known as a/an _____.	offset directional control valve	three-position pressure reducing valve	spring centered directional control valve	throttle valve	GS-0032
11	1339	C	According to U.S. Coast Guard Regulations (46 CFR), when reach rods to tank valves pass through the deck, the stuffing box at this joint must be _____.	grounded with bonding straps	water tight	gas tight	made of nylon or other nonmetallic material	
11	1340	B	Which of the listed pressure vessels is normally exempt from hydrostatic testing at the regular Coast Guard inspection for certification occurring four years after the initial inspection?	Potable system hydrophore tank	A hydraulic accumulator	The main boilers	Air receiver repaired by a certified welder.	
11	1341	C	A 12" X 8" X 8" simplex double-acting pump makes 100 strokes per minute. If the slip is 6%, the discharge rate is _____.	62.54 gpm	81.81 gpm	163.63 gpm	245.44 gpm	
11	1342	C	An unsteady vacuum in a submerged tube evaporator may be caused by _____.	air leaks in the tube nests	improper venting of the tube nests	inadequate steam quality to the air ejector nozzles	high water level in the shell	

11	1344	B	An increase in the heat load to a refrigeration system will cause _____.	the suction pressure to decrease	the suction temperature to increase	increased ice formation on the evaporator coil	excessive short cycling of the compressor	
11	1345	A	The inability to maintain proper vacuum in a submerged tube evaporator can be caused by _____.	fluctuating steam pressure to the air ejector nozzle	improper venting of the evaporator tube nests	air leaks in the evaporator tube nests	high water level in the evaporator shell	
11	1346	B	Generally, centrifugal pumps operating without a positive suction head must be primed before they will move liquid on their own. The priming is usually accomplished with a _____.	regenerative pump	rotating liquid piston pump	jet pump	turbine pump	
11	1347	B	The process control mode shown in the illustration is an example of which of the listed modes of control?	Proportional control	Integral control	Derivative control	On-off control	GS-0147
11	1348	B	A hydraulic system directional control valve fitted with 'detent' will _____.	have an infinite number of valve positions	usually be shifted into three specific positions	be able to be varied through out the travel of the valve spool	have an offset, directional control only	
11	1349	C	Which of the following is true concerning the issuance and use of Coast Guard form 948 'Permit to Proceed to Another Port for Repairs'?	The permit can only be issued if the vessel currently has a valid unexpired Coast Guard Certificate of Inspection.	No freight or passengers are allowed to be carried when the vessel is issued the permit.	The permit can only be issued upon written application by the master, owner, or agent of the vessel.	All of the above.	
11	1350	D	According to Coast Guard Regulations, flexible hoses used as supply and return lines to hydraulic system components, must have _____.	the working pressure of the system stamped on one of the end fittings	the working pressure of the system stamped on both of the end fittings	an inner tube constructed of seamless reinforced polyester braid	a designed bursting pressure of at least four times the maximum working pressure of the system	

11	1351	B	Which of the listed temperatures represents the saturation temperature for water at a saturation pressure of 14.7 psia (101.34 kPa)	198°F (92°C)	212°F (100°C)	335°F (168°C)	429°F (220°C)	
11	1353	B	The discharge head of a centrifugal pump will vary directly with the _____.	change in impeller diameter	square of the impeller diameter	cube of the impeller diameter	impeller efficiency for large changes in the size of the impeller	
11	1354	B	The boiling point of water in an open container at sea level is 212°F. If the pressure on the open container is decreased, the boiling point will _____.	increase	decrease	increase and then decrease	decrease and then increase	
11	1355	C	A vacuum differential is maintained in the distillate circuit between any two stages of a multiple stage distilling plant by the use of a/an _____.	steam trap	butterfly valve	loop seal	adjustable controller	
11	1356	A	To thoroughly pump out the bilges using a horizontally mounted centrifugal pump, the _____.	pump must always be primed	volute must impart a radial and rotary motion of the water	suction side connection must guide the liquid to the lantern rings	stuffing box should not be allowed any water leakage	
11	1357	A	A fixed orifice plate is generally installed in the live steam supply to an evaporator. One of the functions of this orifice is to control the quantity of the supplied steam. A second function is to _____.	reduce pressure fluctuations of the steam supply in the salt water feed heater	produce more useful desuperheated supply steam	guarantee that the steam supply will remain saturated	produce a low salt water feed heater shell absolute pressure	
11	1359	B	The hydraulic system of a deck winch has been drained, flushed, and refilled with hydraulic fluid. An erratic knocking noise from the hydraulic motor when the winch is started would indicate _____.	the fluid level in the reservoir is too high	air trapped in the system	clogged suction line fluid filters	abrasive matter circulating in the oil	
11	1361	B	Which of the following terms would best describe the temperature at which a liquid boils at a given pressure?	Degree of saturation	Saturation temperature	Superheated temperature	Degree of superheat	

11	1362	A	In the illustration, the best way to make the pieces a locational interference fit is to _____.	turn down the shaft in figure "B", four to five thousandths of an inch	drill the hole eleven thousandths of an inch larger	do nothing, with a large enough hammer this will be a locational interferance fit	heat the shaft until the nominal diameter is two hundred and fifty thousandths of an inch	GS-0019
11	1363	C	When drilling a hole in a piece of work chucked in a lathe, you should mount the drill chuck in the _____.	compound rest	cross feed	tailstock	headstock	
11	1364	A	A refrigerant with oil in solution has a _____.	higher boiling temperature for a given pressure than does a pure refrigerant	lower boiling temperature for a given pressure than does a pure refrigerant	boiling pressure equal to that of a pure refrigerant at a given pressure	boiling point will not be affected by entrained oil	
11	1365	C	Where a two-stage air ejector set is used in a two-stage flash evaporator, the first-stage air ejector takes suction from the second stage of the evaporator, and the second stage air ejector _____.	takes suction from the first stage of the evaporator	takes suction from the second stage of the evaporator as well	takes suction from the first stage ejector discharge	is normally idle and used mainly as a standby unit	
11	1366	C	Which of the following statements is true of the illustrated pump?	It is a non-positive displacement pump.	Discharge is from the outlet marked "G".	It is a positive displacement air operated pump	The pump suction is through the suction inlet marked "C".	GS-0061
11	1367	A	As shown in the illustration, the pneumatic force balance unit could be used for a _____.	water level alarm actuator	proportional action steam pressure transmitter	feedwater regulating value positioner	fuel oil heater temperature regulator	GS-0145
11	1368	A	The device shown in the illustration is typically called a/an _____.	offset, directional control valve	three-position, directional control valve	variable-position, directional control valve	infinite-position, directional control valve	GS-0024
11	1369	C	A centrifugal ballast pump has a capacity of 200 gpm. If suction is taken on a ballast tank containing 200 long tons of seawater, how much water will be remain in the tank after discharging for one hour?	45.83 long tons	101.63 long tons	154.16 long tons	199.87 long tons	

11	1370	B	The rudder shown in the illustration is correctly termed a/an _____.	balanced rudder	unbalanced rudder	semi-balanced rudder	contra-guide rudder	GS-0101
11	1371	A	A vapor under pressure stays in contact with, and at the same temperature as the liquid from which it was generated. The vapor and liquid in this situation are, therefore, said to be in a/an _____.	equilibrium contact	latent contact	critical state	superheated state	
11	1372	C	In a flash type distilling plant, a screen is fitted over the suction connection to the brine overboard pump in order to prevent _____.	the pump from cavitating	excessively large salt crystals from damaging the pump	scale from passing into the brine pump and clogging impeller passages	electrolysis from occurring in the pump	
11	1373	D	In order to convert taper per inch to taper per foot, you should _____.	subtract 12	add 12	divide by 12	multiply by 12	
11	1374	C	Assume the normal refrigerant pressure is 14 psig in the evaporator of the refrigeration system shown in the illustration. If this pressure is increased, the _____.	chill box temperature will decrease	reciever temperature will increase	refrigerant boiling temperature will increase	evaporator temperature will decrease	RA-0005
11	1375	B	Packing extremely soft grease into a roller bearing will cause _____.	excessive channeling of the grease	high temperatures to develop as result of churning	emulsification of the thickener additive	gelling of the base oil	
11	1376	A	Centrifugal pumps, used to handle hot liquids, must have a minimum flow through them under all operating conditions. This flow serves to _____.	prevent overheating and vapor bound conditions	maintain the net positive suction head of the pump	maintain hydraulic differential in the pump impeller passages	keep the shaft glands cool	
11	1377	B	Over tightening of the valve stem packing to a pneumatically controlled final control element, shown in the illustration, will cause _____.	valve stem breakage	erratic operation	reduced controlled offset	overheating of the diaphram	GS-0051
11	1378	B	Hydraulic system reservoirs are often fitted with a combined filler/breather cap. If the breather element becomes fouled, the _____.	reservoir will become pressurized	reservoir will be subjected to a partial vacuum	flow through the return lines will be stopped	actuator response time will be halved	

11	1379	D	Coast Guard Regulations (46 CFR) concerning shutoff valves located in fuel oil tanks, state that the valves _____.	shall be arranged for local control	must be made of steel	must be power operated	may be made of cast iron	
11	1380	C	A pneumercator is useful in measuring _____.	relative humidity	air pressure	liquid levels in tanks	fluid pneumercations	
11	1381	D	Machinery operating features are designed to help conserve energy. Which of the following results will not contribute to energy conservation?	Reduction of friction.	Insulation of hot surfaces.	Lubrication of moving parts.	Elevation of heat exchanger overboard outlet temperatures.	
11	1382	A	On which of the following heated surfaces of a flash type evaporator would you be more likely to find soft scale formation?	Feedwater heater internal tube surfaces.	Internal distillate cooler tubes.	Flash chamber vertical surfaces.	Distilling condenser tubes.	
11	1385	B	Coast Guard Regulations (46 CFR) require all power-operated valves, other than those opened against spring force, to have an energy storage system. That energy storage system shall be capable of _____.	cross connection to an alternate power supply	cycling all connected valves once	operating any valve independently	closing the boiler quick-closing fuel valves	
11	1386	A	The total static head of a system resisting the operation of a centrifugal pump is the difference in elevation between the _____.	discharge liquid level and the suction liquid level	discharge liquid level and the pump centerline	suction liquid level and the pump centerline	suction submergence level and the pump discharge	
11	1387	C	With regards to a direct acting air pilot relay shown in the illustration, an increase in the value of the controlled pressure at "B" will stroke the pilot valve stem, causing the _____.	supply air pressure to increase	pilot valve stem to move upward	operating air pressure to increase	operating air pressure to decrease	GS-0050
11	1388	B	Strainers are commonly used in hydraulic systems to _____.	protect the pump from fine soluble contaminants	prevent solid particles from entering the pump	prevent solid particles from entering the filter	protect the directional control valves	

11	1389	D	The Certificate of Inspection for your vessel was issued in January. In March of the same year you need to replace a cooling water pump for the refrigeration system. What action would be appropriate?	Inform the nearest Officer in Charge, Marine Inspection of the pump replacement.	Defer informing the Coast Guard of the pump's replacement until the mid-period inspection.	Inform the Coast Guard if the replacement will involve welding or burning.	Replace the pump, as the Coast Guard need not be informed of the pump replacement.	
11	1391	D	If 1 Horsepower equals 42.45 BTU's per minute, then the energy required to lift a 1 pound (.454 kg) weight, 778 feet (.24 km), against the force of gravity, would be the same as the number of BTU's required to raise the temperature of _____.	1 ounce (28.3 g) of water 1°F (.55°C)	1 quart (.95 l) of water 1°F (.55°C)	1 gallon (3.78 l) of water 1°F (.55°C)	1 pound (.454 kg) of water 1°F (.55°C)	
11	1392	C	Which of the following statements concerning the operation of a single-acting hydraulic ram is correct?	Hydraulic force is applied simultaneously in two directions against the ram by directional ports.	The single-acting ram is both extended and retracted by means of hydraulic force.	The single-acting ram is not retracted by means of hydraulic force.	Hydraulic force applied to a single-acting ram results in a pulling motion.	
11	1393	C	Coast Guard Regulations (46 CFR) require a single tail shaft with water lubricated tail shaft bearings, stress-relieved keyway, and fabricated from materials resistant to corrosion by sea water, to be drawn and examined once in every _____.	2 years	3 years	5 years	8 years	
11	1394	D	Excessive oil foaming in the crankcase of a refrigeration compressor is most likely to occur when the compressor _____.	has run continuously for a long period	suction pressure is below normal	oil level is below normal	starts after a long idle period	
11	1395	B	The purpose of the instrument illustrated is to _____.	gage resistors	measure wire diameter	measure insulation thickness	strip insulation from wire	GS-0079

11	1396	D	Which of the following statements is correct with regards to the operation of a centrifugal cargo pump?	Oil is discharged from the center of the impeller through the outlet.	Gravity causes the oil to flow toward the discharge.	The self-priming feature of the centrifugal pump enables it to draw its own suction as it starts.	The discharge capacity varies directly with the speed of the impeller.	
11	1397	C	The probable cause of erratic operation of a pneumatically controlled steam pressure reducing valve is _____.	the range spring has become weakened	an incorrect loading pressure supplied to the power unit	a partially restricted loading air pressure line	a pinhole in the power diaphragm	
11	1398	B	Some fluid filters used in hydraulic systems are designed to cope with increasing pressure differentials by _____.	diverting the flow automatically to the standby filter of the duplex unit	automatically bypassing the fluid via an internal valve arrangement	automatically securing the system	diverting the pump discharge directly back to the suction	
11	1399	D	A ballast pump, with a capacity of 200 gpm, takes suction on a tank containing 300 long tons of sea water ballast. How much ballast will remain in the tank after pumping for one hour?	45.83 long tons	91.66 long tons	183.32 long tons	254.17 long tons	
11	1400	A	Your vessel is departing at 1800 hours on a voyage of more than 48 hours duration. Coast Guard Regulations (46 CFR) require that the steering gear be examined and tested no earlier than _____.	0600 hours	0900 hours	1200 hours	1500 hours	
11	1401	A	The equation 'energy in = energy out' is a simple way of stating the principle of the _____.	conservation of energy	conservation of matter	conversion of matter to energy	conversion of energy to matter	
11	1402	A	With oil bath lubrication of ball bearings in a cargo pump, the oil level should _____.	never be higher than the center of the lowest ball in the bearing housing	cover the bottom of the pump shaft	cover the top ball in the bearing housing	be kept at the top of the oil reservoir	

11	1403	D	The vessel has its propulsion machinery located amidships, using a water lubricated stern tube bearing, to carry a tail shaft of a 15 inch (38.1 cm) diameter. During the inspection the wear between the stern tube and the bearing surface was measured as 1/4 inch (.635 cm). Which of the following actions should be carried out as a result of this measurement?	Pull tailshaft and replace the bronze liner.	Pull tailshaft and replace the lignum vitae.	Pull tailshaft and buildup the bronze liner.	Nothing, as the reading is within the allowable limits.	
11	1404	C	In a compression refrigeration cycle, the temperature of the liquid refrigerant experiences its greatest decrease in the _____.	evaporator	compressor	expansion valve	condenser	
11	1405	B	Which of the instruments listed is used to measure the gauge of a piece of sheet metal?	Gauge calibrator	Wire gauge	Inside micrometer	Circular mil	
11	1406	C	A recirculating, or bleed off line is installed on a centrifugal pump in order to _____.	establish a back pressure at the labyrinth seal to eliminate leakage	equalize pressure on both sides of the suction valve disc	prevent the pump from overheating when operating at shutoff head	decrease the net positive suction head	
11	1407	D	If the loading air pressure for a diaphragm controlled valve drops below the designed operating pressure, the valve will _____.	fail to stroke open	stroke slowly through its operating range	stroke rapidly closed	fail to stroke through its complete range	
11	1408	A	An improperly maintained filter used in a hydraulic system can _____.	reduce or stop the output action of the actuator	cause leaking of the flexible line connections	rupture the pump discharge piping	all of the above	

11	1409	D	Which of the following would require the Officer in Charge, Marine Inspection be notified?	The renewal of a superheater safety valve with one of the same kind that was certified by a Coast Guard inspector at the place of manufacture.	A vessel being placed in drydock for the purpose of repainting the underwater portion of the hull.	A hydrostatic proof test at design pressure, conducted by the ship's force, in which the safety valves were gagged to test a tube plugging repair.	All of the above.	
11	1410	B	A pneumercator is used to indicate fuel oil _____.	pressure	level	temperature	flow	
11	1411	C	Which of the following statements concerning energy is correct?	Energy can be created or destroyed.	Energy may not be transformed.	The total quantity of energy in the universe is always the same.	None of the above.	
11	1412	A	By which of the following means is force efficiently provided to vary the pitch of the blades on a modern controllable pitch propeller?	Hydraulic	Mechanical	Pneumatic	Electrical	
11	1413	C	The vessel has its propelling machinery located amidships, with a water lubricated stern tube bearing carrying a 12 inch diameter shaft. What is the maximum allowable permitted wear before rebushing is required, as per Coast Guard Regulations (46 CFR)?	1/4 inch	5/16 inch	3/8 inch	1/2 inch	
11	1414	B	Which of the listed statements is correct concerning refrigeration systems?	Dehydrators must be used continuously in a refrigeration system.	A 25 ton refrigeration system has the same cooling effect as melting 25 tons of ice in 24 hours.	A thermostatic expansion valve is used to control refrigerated space temperature.	The liquid receiver functions to collect and remove noncondensable gases.	

11	1415	B	As the speed of an oil lubricated ball bearing increases, fluid friction, due to churning, generates heat and should be avoided by _____.	adding more lubricant until the ball bearings are completely covered with a layer of oil	reducing the quantity of lubricant until only a mist of oil is present on the ball bearings	maintaining a continuous fluid film of oil on the bearings	installing oil rings on the ball bearings	
11	1416	B	A centrifugal pump, normally operated under a positive suction head, has its impeller replaced by one with a larger suction eye. What effect will this change have on the pump?	The pump motor will electrically trip off the line.	The pump will deliver more gallons per minute at the same RPM.	The pump will deliver less gallons per minute at the same RPM.	The capacity in gallons per minute will not be affected by the impeller suction eye size.	
11	1417	B	When the vessel's steering wheel on the navigation bridge is turned, the difference existing between the position of the wheel and that of the rudder is known as _____.	proportional band	the error signal	the reset signal	feedback	
11	1419	A	A ballast pump with a capacity of 200 gpm (757 lpm) is used to fill a ballast tank with seawater. If the pump discharges seawater into the tank for one hour, how many tons of saltwater ballast have been taken onboard?	45.85 (46.5 t metric)	48.53 (49.32 t metric)	51.58 (52.43 t metric)	54.38 (55.3 t metric)	
11	1420	A	Double seated, pneumatically controlled, regulating valves exhibit good balancing characteristics essential for low-sensitivity applications because _____.	high pressure enters between the seats and creates equal, but opposing forces	they employ a specially fabricated diaphragm	the feedback control signals balance the opposing forces acting on the diaphragm	the special diaphragm motor spring resists pressure changes	
11	1421	C	The quantity of heat required to raise the temperature of a unit mass of a substance 1° is known as _____.	latent heat	sensible heat	specific heat	variable heat	
11	1422	A	After cutting a piece of tubing to be flared, you should _____.	remove inside burrs with a reamer	rough up the outside surface of the tube end with a file	flare the tube before removing the burrs	crimp the tube end in order to slip on the fitting	

11	1424	B	Which of the conditions listed represents the greatest effect of excess frost accumulation on the evaporator coils?	Keeps the refrigerated space cooler.	Reduces the efficiency of the plant.	Takes the load off the compressor.	Has no affect on the system.	
11	1425	B	To measure the circumference of a piece of pipe, you should use a _____.	machinist's steel rule	flexible steel rule	hook rule	folding rule	
11	1426	B	When a centrifugal pump is operating with a positive suction head, the inner end of the stuffing box is _____.	under a vacuum and air tends to leak into the pump through the shaft stuffing box	under a pressure and fluid may tend to leak out from the pump along the shaft through the stuffing box	sealed by a vacuum and no leakage will occur	sealed by the seal cage or pump lantern ring	
11	1427	B	Which of the following control actions, when combined with proportional-position action, will eliminate manual repositioning of the set point for each load change to produce an automatic reset action?	Neutral band	Floating action	Reciprocal action	Rate action	
11	1428	C	A reservoir, as used in hydraulic systems aboard ship, is used to store hydraulic oil. Another function is to _____.	act as a shock absorber	maintain the stored oil under pressure	act as a base or foundation for the power unit	eliminate pressure surges in the system	
11	1429	C	According to U.S. Coast Guard Regulations (46 CFR Part 92), how many means of escape must be provided in spaces where the crew may be quartered or employed?	Two, both of which must be through watertight doors.	Two, both of which are located as close together as possible to centralize escape routes.	Two, at least one of which shall be independent of watertight doors.	Two, both of which must be vertical ladders terminating in locked watertight scuttles.	
11	1430	C	The power necessary to stroke a diaphragm control valve, as used in a pneumatic control system, is supplied by the _____.	valve positioning plunger	controlled fluid pressure	operating or loading pressure	valve diaphragm tension	GS-0051
11	1431	B	Which of the following terms is used to indicate that the addition of heat will result in a temperature change?	Latent heat	Sensible heat	Sublimation heat	Critical point heat	
11	1432	A	One turn of the micrometer barrel will linearly move the spindle _____.	0.025 inch	0.205 inch	0.250 inch	0.110 inch	

11	1433	B	What is the maximum tail shaft to stern tube bearing clearance (at the after end of the stern tube) for a vessel in ocean service, with an aft machinery space, a 14" diameter tail shaft, and a water lubricated stern tube bearing constructed of material other than rubber?	0.25	0.3125	0.374	0.4375	
11	1434	C	Frost appearing on one set of evaporator coils of a multi-box, direct expansion type refrigeration system _____.	increase the value of superheat to the fluid leaving the coils	will assist in increasing the refrigeration effect	can be removed by passing hot vapors through the coils	can be quickly removed by simply shutting off fluid flow to the coils	
11	1435	C	To set the dividers to the proper radius, you should use a _____.	micrometer	scribing circle	steel rule	calipers	
11	1436	B	Theoretically, a double suction impeller is in hydraulic axial balance. In actuality this balance is rarely achieved due to _____.	an unbalanced force exerted from the direction of the impeller nearest the driving motor	unequal or nonuniform flow to the suction eyes of the impeller housing	excessive sealing water flow to the stuffing box	flexible shaft design which causes rapid wear of the outboard shaft bearing	
11	1437	B	Which of the following statements expresses the function of proportional-plus-reset action?	The action measures the rate of time of the final control element.	The action gives control without offset under all load conditions.	The action combines proportional-position action and rate action.	The action is very unstable for anything but constant load conditions.	
11	1438	D	One function provided by a hydraulic accumulator is to _____.	provide an area where air can separate from the oil	provide an area to separate solid contaminants from the oil	act as an oil and water separator	absorb shocks occurring in the system	

11	1439	B	In accordance with Coast Guard Regulations (46 CFR), it is the duty of the Chief Engineer to acquire and seal a sample of fuel oil received whenever fuel oil bunkers are taken. This sample must be preserved until _____.	the voyage is completed	that particular supply of oil is exhausted	it can be sent ashore to the proper oil company personnel for testing and the results entered in the Oil Record Book, CG-480	return to the first U.S. port where upon it must be sent ashore for chemical analysis and the findings submitted to the nearest Officer in Charge, Marine Inspection	
11	1440	C	The device shown in the illustration is used to determine the _____.	flash point of oil	pour point of oil	viscosity of oil	lubricating qualities and film strength of oil	GS-0069
11	1441	C	Which of the listed forms of heat transfer, if any, is illustrated by the flow of combustion gases through a boiler?	Natural convection only	Forced convection only	Both natural convection and forced convection	None	
11	1442	A	If a micrometer were opened to a distance of 0.0001 inch, you would say the reading is _____.	one ten thousandth of an inch	ten one thousandths of an inch	one millionth of an inch	ten millionths of an inch	
11	1443	B	On a vessel using a water lubricated tail shaft bearing, a single tail shaft without a special keyway, and not constructed of materials resistant to corrosion by seawater, the tail shaft must be drawn and examined twice within any _____.	4 year period	5 year period	6 year period	8 year period	
11	1444	B	If a substantial difference is maintained between the refrigerant temperature and the box air temperature within the refrigerated compartment, this may result in _____.	slugging in the condenser	the evaporator coil to frost	the compressor to short cycle	the thermal expansion valve to malfunction	
11	1445	C	The best method of determining the number of threads per inch of a bolt or screw would be through the use of a _____.	thread tool gage	machinist's scale	screw pitch gage	screw thread micrometer	
11	1446	C	Shim stock thickness is measured by a/an _____.	shim gage	feeler gage	outside micrometer	inside micrometer	

11	1447	A	A controller with floating action has a controlled variable where the range of values produces no motion of the final control element. This range of values is called the _____.	neutral zone	set point	control point	offset	
11	1448	B	When the illustrated device is in the process of opening the associated valve, the motor will be secured by the action of the _____.	torque switch	limit switch	manual stop only	disengaging of the splined dog clutch	GS-0027
11	1449	C	Your vessel has taken on 25,000 gallons of fuel with an API gravity of 30.4 at 60°F. Using the table shown in the illustration, how many long tons of fuel have you taken onboard?	63.57 long tons	72.48 long tons	81.22 long tons	90.97 long tons	GS-0149
11	1450	C	An arrow superimposed on a hydraulic graphic symbol at approximately 45°, as shown in the illustrated figures A, B, and C, indicates the component _____.	is pilot controlled	is pressure compensated	can be adjusted or varied	allows flow in one direction only	GS-0068
11	1452	B	To check the thickness of a piece of thin shim stock before using it to make a bearing shim, you should use a _____.	feeler gage	micrometer	machinist's rule	depth gage	
11	1453	A	When the tail shaft is drawn from a vessel in dry-dock, which of the following inspections is required to be carried out?	The propeller hub taper and shaft keyway should be inspected for cracks or corrosion.	The stern bearing alignment with the stern frame should be checked.	The interior of the stern tube should be inspected for leaks.	The shaft liner should be removed and inspected for cracks.	
11	1454	B	If the evaporator coil of a single box, air cooled refrigerator accumulates frost, the compressor will most likely _____.	run continuously	short cycle on low pressure cutout	short cycle on high pressure cutout	fail to start	
11	1455	C	The best tool to use to measure the number of threads per inch on a bolt is a _____.	micrometer	tap	screw pitch gauge	pair of outside calipers	

11	1456	B	Compared to globe and angle valves, gate valves _____.	are more suitable for throttling	operate with little or no pressure drop when fully opened	are more easily repaired	cannot be used for service requiring infrequent operation	
11	1457	D	One disadvantage of proportional-position action is that _____.	corrective action is only proportional to offset	exact correction can be made only when there is no change in load	the controlled variable is stabilized	the corrective action is only proportional to the deviation	
11	1458	B	The device illustrated is in the process of opening or closing the associated valve. If the manual engaging lever is moved to the 'engage' position, the result will be _____.	severe damage to the unit	that nothing unusual will happen	the external, handwheel will rotate clockwise	the external, handwheel will rotate counterclockwise	GS-0026
11	1459	D	Which of the following conditions require the Coast Guard Officer in Charge of Marine Inspection be notified?	Replacement in kind of ship's service 265 psi air receiver.	Breaking of a safety valve seal.	Vessel to undergo an unscheduled drydocking solely for the purpose of painting the underwater portion of the hull.	All of the above.	
11	1460	B	In the design of hydraulic piping and equipment consideration is given to minimize turbulence in the hydraulic fluid, as this will cause _____.	molecular fluid vibration	energy losses	wide pressure variations	mechanical damage to control valves	
11	1461	A	The quantity of heating steam supplied to the feed water heater of a two-stage flash type distilling plant is held relatively constant by a/an _____.	orifice plate	attemporator	back pressure regulator	first-stage bypass valve	
11	1462	C	To measure the diameter of a piece of round stock, you should use a _____.	dial indicator	wire gauge	micrometer	circular slide rule	

11	1463	C	When using the circular magnetic particle method to nondestructively test a weldment, the best results are obtained when the _____.	current is flowing at right angles to the discontinuity	magnetic field is parallel to the discontinuity	magnetic field is at right angles to the discontinuity	defect is located outside the parallel flux path of the prods	
11	1464	D	If a refrigeration compressor is running continuously without lowering the temperature in the refrigerated space, the trouble may be _____.	a shortage of compressor oil	warm food in the refrigerator	excessive condenser cooling water	a shortage of refrigerant	
11	1465	D	The temper is likely to be drawn out of a chisel edge when you _____.	hold it next to a wet grinding wheel	soak it in hot oil for lengthy periods	grind the cutting angle too small	grind it for long periods of time with too much pressure	
11	1466	A	Which of the valves listed should be used either in the fully opened or the fully closed position?	a gate valve	a globe valve	any check valve	any needle valve	
11	1467	A	A two-position single-point action controller has been adjusted to minimize cycling and would only be suitable for _____.	constant load conditions	intermittent load conditions	wide temperature fluctuations	rate action only	
11	1468	B	With regards to the illustrated device, if the unit is engaged to use the manual hand wheel for the opening and closing of the associated valve, pushing either the remote 'open' or 'close' push buttons during this mode of operation will _____.	cause severe damage to the unit	disengage the manual control	rotate the external, handwheel clockwise	rotate the external, handwheel counterclockwise	GS-0026
11	1469	B	If a lifeboat winch allows a lifeboat to descend to the water at an excessive speed, you should _____.	remove unnecessary weight from the boat	adjust the centrifugal brake mechanism	adjust the davit mounted limit switches	engage the motor friction clutch bands	
11	1470	B	The rudder torque capacity of the four ram steering gear illustrated, is rated at 44,210,000 inch-pounds with one power unit in operation. If the four ram system was able to be operated as a two ram system with both power units on line, what would be the available torque?	11,052,500 inch pounds	22,105,000 inch pounds	44,210,000 inch pounds	88,420,000 inch pounds	GS-0067

11	1471	A	Which of the following modes of heat transfer does NOT require any physical contact between a warmer and a cooler substance?	Radiation	Conduction	Natural convection	All of the above	
11	1472	C	To get an accurate inside measurement of the diameter of a 1/2 inch hole, you should use a/an _____.	depth micrometer	inside micrometer	small hole gauge	inside spring caliper	
11	1473	A	One of the determining factors regulating the time interval for drawing a vessel's tail shaft depends upon the design to reduce stress concentrations in accordance with ABS standards. Which construction method meets this design criteria?	Spooned keyway and slotted key	Stress relief grooves at the aft end of the propeller and forward end of the liner	Keyway cut as to give a sharp rise from the bottom of the keyway to the shaft surface	All of the above	
11	1474	A	During tests to discover why a refrigeration compressor is running excessively, it is determined that the refrigerated space temperature is nearly normal, the suction pressure is slightly above normal, and the head pressure is low. In this situation, you should check for _____.	leaking door gaskets	high cooling water temperature	air in the system	a shortage of refrigerant	
11	1475	B	A chisel with a mushroom head should not be used because _____.	the chisel cannot be struck squarely	pieces may fly off the chisel and injure your eyes	the hammer head may be chipped	it must be held firmly by the head to strike it	
11	1476	A	A gate valve installed in a pipeline should be _____.	used in either the fully closed or fully opened position	installed with the stem down	used for steam service only	used to throttle or regulate the flow of liquid	
11	1477	B	When a controller is provided with reset rate adjustment, a change in this adjustment results in a change of the _____.	desired value of the proportionally controlled variable	floating rate of the proportional-speed floating component	value representing the readjusted controlled variable	desired prepositioned value of the controlled medium	
11	1478	A	When a non-butterfly valve is closed, the motor of the device illustrated will be secured by a _____.	torque switch	limit switch	two-position, micro switch	manual, push button only	GS-0027

11	1479	B	Your vessel has taken on 25,000 gallons of fuel with an API gravity of 35.1 at 60°F. Using the table shown in the illustration, how many long tons of fuel has been actually taken on board?	69.74 long tons	78.92 long tons	81.22 long tons	88.40 long tons	GS-0149
11	1480	C	Energy losses occurring in a hydraulic system are ultimately absorbed by the _____.	reservoir expansion chamber	hydraulic piping flexibility	atmosphere as heat	fluid as friction	
11	1481	C	The movement of heat within a fluid, caused by the application of thermal energy, is called _____.	radiation	conduction	convection	condo-radiation	
11	1482	B	Air compressor cylinder unloaders enable the compressor to _____.	vary their speed according to temperature and load	start and come up to speed before air compression begins	change speed according to overload demands	reduce compressed air charge density	
11	1483	B	Which of the nondestructive testing methods can be easily used yet with good accuracy to detect, locate, identify, and measure defects in welds and base metals; regardless of material type and structure?	Radiography	Ultrasonics	Visible dye penetrant, type "B" (red on white)	Magnetic particle	
11	1484	B	Which of the conditions listed will cause a refrigeration compressor to run constantly without simultaneously decreasing the temperature in the refrigerated space?	Shortage of refrigerant oil.	Slight shortage of refrigerant.	Excessive condenser cooling water flow.	Faulty expansion valve.	
11	1485	A	What precautions should be followed when using a chisel having a mushroomed head?	Remove the ragged edges by grinding.	Do not strike the mushroomed portion.	Use only light hammer blows with the chisel.	Knock off the ragged edges with a hammer.	
11	1486	A	A gate valve installed in a piping system should be used _____.	in either fully closed or fully opened positions	only with the stem facing down	only for lube oil service	to throttle the flow of liquid	

11	1488	B	The device shown in the illustration is used to open and close a butterfly valve. The motor will be typically secured during the closing phase by the use of the _____.	torque switch	limit switch	two-position, micro switch	manual, push button only	GS-0027
11	1489	C	When pressure is applied to a Bourdon tube-type pressure gage, it will begin to unbend. The reason for this action is that the _____.	pressure is the greatest on the arc AB	pressure is the greatest on the arc DC	force is the greatest on the arc AB	force is the greatest on the arc DC	GS-0114
11	1491	B	Which of the listed methods of heat transfer takes place when two substances of different temperatures are in physical contact with each other?	Radiation	Conduction	Convection	Each of the above	
11	1492	C	The unloading system on an air compressor will _____.	increase compressor discharge pressure on demand	increase compressor operating speed as necessary	allow the motor to turn the compresser opposed only by friction	reduce the compressor frictional load when starting	
11	1493	A	When the danger of freezing exists, all steam driven reciprocating pumps and deck equipment should be _____.	cycled at least once a day	cycled once every 4 days	cycled once every week	watched carefully while idled	
11	1494	B	A warmer than normal compressor suction line might be caused by _____.	insufficient lubrication	insufficient refrigerant	excess refrigerant	excessive opening of the expansion valve	
11	1495	B	Solder used for joining metal surfaces should have a _____.	fusing point much higher than that of the metals being joined	melting point lower than that of the metals being joined	coating of Borax flux to raise the melting point	composition of lead and tin if the solder is the 'hard' type	
11	1496	D	The proper use of a flat chisel is for cutting _____.	inside corners	slots or keyways	half-round grooves	flat stock	
11	1497	C	The amount of change of a controlled variable that is necessary to cause a specific change in the position of the final control element depends upon the _____.	differential gap adjustment	range of valve opening	proportional band adjustment of the controller	form of the controlled medium	
11	1498	D	The device depicted in the illustration is used to _____.	jack over the main engine	power an elevator car	power a centrifuge	remotely open piping system valves	GS-0026

11	1499	D	Which problems can occur if the brake band lining of a wildcat brake becomes excessively worn?	The driving engine will overspeed.	The anchor will immediately drop.	The clutch will overheat.	The brake's effectiveness will be reduced.	
11	1500	D	A closed loop pneumatic control system always operates with _____.	a fixed final control element position	simple on/off control	no controller feedback	feedback to the controller	
11	1501	C	Which of the following conditions must exist for heat to flow from one object to another?	The two objects must be in physical contact.	The two objects must be the same size.	There must be an existing temperature differential.	There must be an existing weight differential.	
11	1502	A	The function of an unloader on a two-cylinder, two-stage medium pressure, air compressor is to _____.	remove all but the friction load on the compressor motor when starting	prevent water accumulation in air lines	reduce motor starting voltage	vary compressor speed	
11	1503	A	How can the chance of contaminating hydraulic fluid be decreased when working on hydraulic systems?	Clean the fittings before they are disconnected.	Place drip pans under leaky fittings.	Seal any cracks in lines with Permatex.	Coat all threads with graphite oil.	
11	1504	D	In the refrigeration system, a shortage of refrigerant is indicated by _____.	the compressor short cycling on high pressure cut out switch	high suction pressure	high head pressure	bubbles in the sight glass	
11	1505	B	The overboard discharge valves in the bilge system illustrated are _____.	gate valves	stop-check valves	gate valves operated from above the bulkhead deck	swing check valves operated from above the bulkhead deck	GS-0042
11	1506	B	The illustrated device operates on the principle that the height of the liquid in gage "C" is _____.	directly equal to the height of the liquid in the tank	proportional to the height of the liquid, H	equal to the fluid pressure supplied at D after a small portion of the fluid from the tank forced into column C	proportional to the pressure of the cube root of the height of liquid H, times .491	GS-0066

11	1507	B	The response line installed in a pneumatic proportional action controller functions to _____.	monitor the accuracy of the measuring element	provide a feedback signal for accurate final element positioning	regulate the air supply in the line to the nozzle	readjust the total spring force in the air control relay	
11	1508	B	A non-rising stem gate valve should _____.	be completely opened with the handwheel locked hard at the end of the last opening turn	be opened to the end of the last opening turn, then rotate the handwheel in the closing direction by approximately 1/4 of a turn	be opened by 1/2 of the total number of turns available from full closed to full open	be opened as much as needed, regardless of how little the gate has been moved from its seat	
11	1509	B	Your vessel has just taken aboard 1200 barrels of fuel with an API gravity of 30.9 at 60°F. Referring to the table shown in the illustration, how many long tons of fuel have you taken aboard?	155.88 long tons	163.23 long tons	171.48 long tons	182.82 long tons	GS-0149
11	1510	B	A power failure in the hydraulic system of a compact type steering gear would cause the rudder to _____.	swing 35° right or left	remain locked in its last position	move to the midship position automatically	jam against the rudder emergency stops	
11	1511	B	In a reciprocating pump, the position of the pilot valve is controlled by the position of the _____.	main steam piston valve	piston in the steam cylinder	cushioning valve	governor valve spindle	
11	1512	D	How many calories are contained in 10 BTU?	10 cal	250 cal	1000 cal	2520 cal	
11	1513	C	Condensate must be drained from the intercooler and aftercoolers of an air compressor because _____.	the cooling effect of the condensate reduces the compressor's efficiency	a danger of explosion exists whenever water is present in a compressor	water causes erratic operation of pneumatic components	the volumetric capacity of the first stage is reduced if water remains	
11	1514	A	If a refrigeration system were short of refrigerant, the condition would result in _____.	continuous running of the compressor	high suction pressure	high discharge pressure	short cycling of the compressor on the water failure switch	

11	1515	B	The bilge pump suction manifold, shown in the illustration, is provided with _____.	four stop valves	four stop-check valves	three normally opened valves and one normally closed valve	three normally closed valves and one normally opened valve	GS-0042
11	1516	D	Tinning a soldering iron will _____.	prevent the tip from overheating	protect the tip from scratches	add extra weight to the tip	prevent tip oxidation when heated	
11	1517	C	When a controller with proportional position action is used to control a process, a load change will cause the controlled variable to stabilize at some value other than the set point value. The new point at which the controlled variable stabilizes is called _____.	offset	deviation	control point	load point	
11	1518	D	The handle of a butterfly valve must be _____.	parallel to the axis of flow when the valve is closed	forty-five degrees to the axis of flow when the valve is fully open	either at 0° or 90° but never at any other angle regardless of flow rate	parallel to the flow when in the fully open position	
11	1519	D	The purpose in constructing a pipe tunnel aboard a vessel is to _____.	insulate piping from ambient temperatures	provide convenient grouping of all piping leading fore and aft from the machinery space for easy access and control	enclose all pipes leading to a single forward compartment in their own enclosure	segregate a pipe from the compartment through which it passes	
11	1520	A	When air becomes trapped in the hydraulic fluid of a steering system, the _____.	rudder will respond sluggishly	hydraulic rams will overspeed	sight glass will show bubbles	ram relief valves will lift	
11	1521	B	Before starting a reciprocating, steam-driven pump that has been idle for a period of time, you should _____.	open the steam line root valve	drain the steam cylinder	close the steam cylinder drains	open the liquid cylinder drains	
11	1523	C	The air charge leaving an intercooler, or aftercooler of an air compressor can be expected to be _____.	superheated	supercooled	at or below the dew point	all of the above	

11	1524	D	Noise in a refrigeration compressor can be caused by _____.	worn bearings and piston pins	slugging due to flooding back	too much oil in circulation	all of the above	
11	1525	A	Thermal energy is commonly referred to as _____.	heat	power	horsepower	foot-pound	
11	1526	C	Soldering flux aids the soldering process by _____.	softening the metals	fusing the metals	removing oxides	hardening the metals	
11	1527	A	The cylinder unloading mechanism used on low pressure air compressors is an example of which mode of control?	Two position	Derivative	Integral	Single speed floating	
11	1528	C	Valves used in the machinery space piping systems, and constructed with threaded valve stems, must be _____.	right-hand opening (clockwise)	left-hand closing (counterclockwise)	right-hand closing (clockwise)	direction of opening and closing is unimportant	
11	1529	A	A compressor used in a multi-box refrigeration system, has six of its eight cylinders controlled for variable loads. If only one of five reefer boxes is active what percentage of the controlled cylinders will be unloaded?	100%	66%	33%	0%	RA-0013
11	1530	D	Air trapped in the hydraulic fluid of a steering system would be indicated by _____.	an improper rudder response	hammering noises in the equipment or transmission lines	popping or sputtering noises	all the above	
11	1531	C	Which of the chisels listed should be used for cutting oil grooves?	Diamond point	Flat cold	Round nose	Square nose	
11	1532	C	To determine the diameter of a small hole, which of the listed tools must be used with inside calipers to get an accurate reading?	A Center gage	Wire gage	Micrometer	None of the above	
11	1534	B	'Flooding back' is a condition where the liquid refrigerant _____.	vaporizes in the condenser	reaches the compressor through the suction line	flashes in the liquid line	condenses in the receiver	
11	1535	D	The energy associated with molecules is known as _____.	kinetic energy	potential energy	mechanical energy	thermal energy	
11	1536	D	Flux is used when soldering, in order to _____.	decrease the melting point of the solder	make the solder 'flow'	ensure proper tinning	clean the joint area	

11	1537	B	Which of the following proportional band values most closely approaches 'ON-OFF' control?	-10%	2%	100%	500%	
11	1538	D	Steam traps should be installed at the lowest outlet point of the heat exchanger in a horizontal run of pipe. Which of the following installation considerations should also be maintained?	They should be installed with their main axis horizontal.	They should be installed unpainted and wrapped in an insulation blanket.	A bypass around the trap is unnecessary if the steam input pressure never exceeds 10 psig.	They should remain uninsulated and unpainted.	
11	1539	B	Overgreasing of ball bearings installed on pumps will result in _____.	smoother pump operation	overheating of the bearing	reduced corrosion in the bearing	increased pump capacity	
11	1540	B	Air trapped in the hydraulic fluid of a steering system should be indicated by _____.	the pump overspeeding	an improper rudder response	bubbles in the sight glass	ram relief valves lifting	
11	1541	C	On small passenger vessels of less than 100 gross tons, watertight doors and watertight hatches are _____.	not required to be marked	required to be marked, but on only one side	require to be marked on both sides in at least 1 inch high letters	none of the above	
11	1542	A	The illustrated valve is recommended for use _____.	as either fully opened or fully closed	in throttling fluid flow	in allowing flow in one direction only	in lube oil systems exclusively	GS-0047
11	1544	A	While troubleshooting a refrigeration system for low head pressure, liquid refrigerant flooding back from the evaporator is determined to be the cause. It may be necessary to _____.	change the expansion valve adjustment	readjust the water regulating valve to increase the flow of water	purge air from the condenser	clean the waterside of the condenser	
11	1545	C	A machine capable of producing 1650 foot-pounds of work per second is considered to produce how much horsepower?	1 hp	2 hp	3 hp	4 hp	
11	1546	B	Soft solders have relatively low melting points and consist mainly of _____.	silver base alloys	lead base alloys	copper base alloys	nickel base alloys	
11	1547	C	Increasing the 'reset rate' of a proportional-plus-reset controller _____.	narrows the proportional band	widens the proportional band	repeats the proportional action more frequently	increase the stability of the controller	

11	1548	C	The quantity of condensate passing through the illustrated steam trap will be reduced as the _____.	amount of vapor contained in "A" decreases	amount of liquid contained in "A" increases	amount of vapor contained in "A" increases	vapor pressure of the liquid contained in "A" decreases	GS-0005
11	1549	D	Ball bearings may become overheated if they are _____.	packed with too much grease	mounted on a misaligned shaft	not lubricated	all of the above	
11	1550	A	If a severe leak develops in the electro-hydraulic steering gear, which of the listed conditions could result?	Loss of vessel steering	Overheating of the gyrocompass	Jamming of the six-way valve	Jamming of the follow-up device	
11	1551	D	The best type of chisel to use for cutting a keyway is the _____.	round nose chisel	flat cold chisel	diamond point chisel	cape chisel	
11	1552	D	Which of the following adjustments will cause the illustrated valve, to close at a lower loading pressure?	Increasing the compression on spring No. 6	Replacing the spring with one that has a higher compression value	Screwing up on sleeve No. 12	Screwing down on sleeve No. 12	GS-0051
11	1553	A	On small, low pressure, air compressors, the cylinders are usually lubricated by the _____.	splash method	mechanical force feed lubricators	detached sump method	internal cooling passages in the crankshafts and connecting rods	
11	1554	D	To correct the condition of slugging and flooding back in a refrigeration system, it may be necessary to _____.	re-adjust the discharge pressure	clean the expansion valve screen	add refrigerant	adjust the expansion valve	
11	1555	A	In a double-effect distilling plant, liquid moisture remaining entrained in the first-effect vapor, is removed by _____.	baffles and vanes	a flash chamber	the second effect separator	the vapor feed heater	
11	1556	A	Power is defined as the _____.	rate of doing work	amount of force needed to overcome friction	amount of work accomplished	distance through which an object is moved	

11	1557	B	When 'reset' action is added to proportional action, the proportional action _____.	aids the reset action during decreasing error transients	aids the reset action during increasing error transients	opposes the reset action during increasing error transients	and reset action are completely independent of one another in the controller operation	
11	1558	B	In the operation of the illustrated steam trap, condensate will continue to pass through the outlet as long as _____.	steam occupies the area labeled "I"	the drop in pressure at "B" does not lower the pressure of the condensate below its current saturation pressure	the drop in pressure at "B" lowers the vapor pressure of the condensate below its current saturation pressure	the pressure in area "H" is at least 85% of the pressure in area "I"	GS-0002
11	1559	D	If a ball bearing for a centrifugal pump is completely packed with grease, _____.	the bearing may heat up	grease may flow out of the seals	early failure may result	all of the above	
11	1560	A	Which of the listed devices would be installed at a control system air pressure reducing station?	Moisture separator	Vacuum breaker	Lubricator	Nonreturn valve	
11	1561	A	Solder is an alloy of _____.	tin and lead	beryllium and antimony	copper and lead	silicon and selenium	
11	1562	A	In the figure shown in the illustration, the standard blueprint symbols above the letters "A", "B", and "C" indicate _____.	the use of internal threads	hole tolerance	finished diameter	interference fit	GS-0036
11	1563	B	Air line lubricators are used in compressed air systems to lubricate _____.	the suction and discharge valves	tools and equipment served by compressed air	air line reducing valves	all of the above	
11	1564	C	If a liquid line strainer, such as the one shown in the illustration, becomes clogged to the extent that it should be cleaned, this will be indicated by _____.	slightly warm strainer body	clicking in the solenoid valve	loss of refrigeration effect in the space being cooled	high suction pressure at the condenser	RA-0010

11	1565	B	In a double-effect distilling plant, the brine particles remaining entrained with the vapor produced in the evaporator first effect, are separated by _____.	a flash chamber	baffles and vanes	the vapor feed heater	a brine pump	
11	1566	D	How much work would be accomplished if a 15 pound box were raised to the top of a 25 foot platform?	15 ft-lb	25 ft-lb	40 ft-lb	375 ft-lb	
11	1567	A	When 'reset' action is added to proportional action _____.	the proportional action opposes the reset action during decreasing error transients	the proportional action opposes the reset action during increasing error transients	the proportional action assists the reset action during decreasing error transients	the proportional action and the reset action are completely independent of one another in the controller operation	
11	1568	B	The basic function of a steam trap is to _____.	regulate the flow of steam leaving a heater	limit the flow of steam leaving a heater until it has given up its latent heat of condensation	limit the flow of steam leaving a heater until it has given up its latent heat of fusion	eliminate steam-pipe water hammer	
11	1569	B	In most pumps and pump motors, overpacking the ball bearings full of grease will result in _____.	moisture emulsification of the bearing grease	insufficient circulation and overheating of the bearing	proper grease circulation to cool the bearing	sliding friction between balls and races	
11	1570	B	The function of port "D" shown in the illustration is to _____.	provide pressure sensing from the compressor crankcase/ suction line	prevent pressure from developing within the bellows that would adversely affect the operation of the unloader control	act as a pressure sensing line from the compressor lube system to unload all cylinders if a lube oil failure occurred	provide a remote control pneumatic signal for changing the control point operation setting	RA-0013

11	1571	A	When a vessel is in dry-dock, the vessel's engineers should _____.	examine the condition of the propeller	chip and paint all hull protection zincs	install new docking plugs in all cofferdams	inspect the hull for hogging or sagging	
11	1572	D	If you change from a low pour point lubricant to a high pour point lubricant in a refrigeration system, _____.	compressor lubrication will be improved	oil will not leave the crankcase	compressor valves will be damaged	oil may congeal in the evaporator	
11	1573	B	Which of the following statements is correct when comparing the cylinder diameters of a two-stage reciprocating air compressor?	The low pressure cylinder will be smaller than the high pressure cylinder.	The high pressure cylinder will be smaller than the low pressure cylinder.	The high and low pressure cylinders will be of equal size.	The low pressure cylinder will be smaller than the high pressure cylinder but the piston stroke will be greater.	
11	1574	D	Water flow occurs through the unit shown in the illustration when _____.	"A" is tilted off of its seat	"C" lifts due to the decrease in pressure on top of the diaphragm	"E" is moved from the position shown	all of the above	GS-0155
11	1575	D	The demisters installed in a flash-type evaporator serve to _____.	deaerate the first effect distillate	filter the condensed flash vapors	deaerate the first and second effect distillate	remove small water droplets entrained in the flashed vapor	
11	1576	B	Mechanical energy in transition is referred to as _____.	horsepower	work	heat	velocity	
11	1577	D	The effect of 'reset', when added to a proportional controller is to _____.	make the controller correction proportional to the rate at which the input change takes place	accelerate the corrective action so as to minimize the possibility of hunting	make the corrective action of the controller proportional to the deviation of the controlled variable from the set point	repeat the proportional action until the controlled variable returns to the set point	
11	1578	A	The basic function of a steam trap includes which of the following processes?	Regulate the flow of condensate from a heater.	Regulate the flow of steam from a heater.	Regulate the flow of steam to a heater.	Regulate the flow of condensate to a heater.	

11	1579	A	A ball bearing will overheat if _____.	completely packed full of grease	filled with grease to 65% of the total open spaces within the bearing	in use for a long time	operated at designed high speed	
11	1580	A	The two most common gases used in pneumatic systems are _____.	compressed air and nitrogen	helium and nitrogen	oxygen and hydrogen	oxygen and acetylene	
11	1581	B	Inspection of a vessel's propeller during drydocking should include _____.	noting the condition of the fairwater	inspection of the keyway	logging inspection results in the official deck log	all of the above	
11	1582	A	The letters 'NPT' used in the notation 1/8-27 NPT as shown in the illustration, indicates the _____.	thread series	thread profile	class of finish	class of fit	GS-0010
11	1583	A	Intake valves installed on most reciprocating low pressure air compressors are actuated by the pressure differential between the air in the cylinder and the pressure _____.	of the air on the external side of the valve	of the push rod and rocker arm assembly	sensed by the receiver low pressure limit switch	sensed by the intercooler diaphragm valve	
11	1584	C	Badly leaking refrigeration compressor discharge valves will cause _____.	overfeeding of the expansion valve	damage to the condenser	constant running of the compressor	flooding of the receiver	
11	1585	A	In a two-stage flash-type distilling plant, the mesh-type vapor separators function to _____.	improve distillate purity	vent noncondensable gases	recycle evaporator flash steam	direct flash steam into the cooler	
11	1586	C	What is the gain in potential energy of an object weighing 10 pounds when it is raised to a height of 10 feet?	10 ft-lb	20 ft-lb	100 ft-lb	1000 ft-lb	
11	1587	A	The device shown in the illustration is an example of which of the listed modes of control?	Proportional control	Integral control	Derivative control	On-off control	GS-0146
11	1589	A	If a ball bearing installed on a pump is completely packed full of grease, this can result in _____.	bearing failure	smoother pump operation	reduced corrosion in the bearing	increased pump capacity	
11	1590	C	Separators are installed ahead of air line lubricators for the primary purpose of removing _____.	the heat of compression	air supply pressure pulses	moisture in the air supply	turbulence in the air supply	

11	1591	C	In an oxyacetylene welding outfit, each cylinder has a regulator and two pressure gages. One pressure gage indicates cylinder pressure and the other gage is used to indicate _____.	tip pressure	upstream pressure	hose pressure	arc pressure	
11	1592	C	In the thread notation shown in the illustration, the "1" preceding '8NC-LH' represents _____.	a single thread	the thread pitch	the outside diameter	the length of the threaded section	GS-0038
11	1593	A	The outlet steam pressure operating range of the regulator shown in the illustration is manually adjusted by the part labeled '_____.'	L	B	D	G	GS-0045
11	1594	D	In a refrigeration system equipped with a reciprocating compressor and a water cooled condensing unit, leaking compressor discharge valves will result in _____.	refrigerant flooding of the compressor	low suction pressure	noisy compressor operation	low head pressure	
11	1595	D	The mesh type steam separators located in a two-stage flash distilling plant, function to _____.	vent noncondensable gases	recycle evaporator flash steam	reheat the flash steam	improve distillate purity	
11	1596	C	Which unit of measurement is used to measure mechanical potential energy?	British thermal units	Horsepower	Foot-pounds	Calories	
11	1597	C	The control mode that is generally not used by itself is _____.	reset control	integral control	derivative control	two position differential gap control	
11	1599	D	During the operation of a variable capacity refrigeration compressor, the lube oil pressure is observed to be maximum normal, with the suction pressure just above the cut out point of the low pressure cut out switch, Under this operating condition, "F" can be rotated _____.	counter clockwise to reduce compressor capacity and thereby increase suction pressure	clockwise to increase compressor capacity and thereby increase suction pressure	counter clockwise to increase compressor capacity and thereby reduce suction pressure	clockwise to reduce compressor capacity and thereby raise suction pressure	RA-0013

11	1600	A	A flash type evaporator is designed to operate in 75°F sea water, if operated in 50°F sea water, _____.	the absolute pressures will be slightly below the predicted design absolute pressures	absolute pressure in the evaporator stages will be higher	the unit will operate at reduced capacity	thermal efficiency will decrease, but brine density will increase	
11	1601	D	The delivery rate of an axial-piston hydraulic pump is controlled by varying the position of the _____.	sliding block	pintle	reaction ring	tilting box or swash plate	
11	1602	B	The drawing labeled "A" in the illustration represents a/an _____.	interferance fit	running fit	basic shaft fit	force fit	GS-0019
11	1603	B	When welding with an oxyacetylene outfit, _____.	open the acetylene valve until the hose pressure is 26 PSIG	open the acetylene cylinder valve only 1/4 to 1/2 turn and leave the wrench on the valve stem	a leaking hose must be repaired by binding with tape	a flashback of flame into the hose is normal	
11	1604	A	A reciprocating refrigeration compressor may be tested for leaking discharge valves by stopping the compressor, turning the discharge service valve all the way in, and then turning the compressor over by hand. If the discharge valves are leaking, the compound gage will show pressures _____.	rising and falling with each stroke	increasing with each stroke	decreasing with each stroke	decreasing to a vacuum	
11	1605	B	Small droplets of water entrained in the flashed vapor produced in a flash-type evaporator, are removed by the _____.	spray pipes	demisters	condensers	splash baffles	
11	1606	D	Which of the following terms could be applied to the simple definition 'the energy of motion'?	Electrical energy	Thermal energy	Potential energy	Kinetic energy	
11	1607	B	Reset control is also referred to as _____.	derivative control	integral control	rate control	proportional control	

11	1608	A	The device shown in the illustration is typically designed to operate in conjunction with a pneumatically controlled valve in order to maintain _____.	relatively constant liquid tank levels	steam flow rates	flow rates as a square root extractor	constant pump-head pressures	GS-0052
11	1609	D	During the operation of a variable capacity refrigeration compressor, the lube oil pressure is observed to be at its nearly normal minimum pressure, with the suction pressure indicated at 8 psi. Under this operating condition, "F" should be rotated _____.	counter clockwise to increase compressor capacity and thereby reduce the suction pressure	clockwise to increase compressor capacity and thereby reduce the suction pressure	counter clockwise to decrease the compressor capacity and thereby reduce suction pressure	clockwise to decrease compressor capacity and thereby raise the suction pressure	RA-0013
11	1611	A	The discharge capacity of the axial piston hydraulic pump, shown in the illustration, is _____.	fixed by the pump housing angle	increased by adding a longer cylinder block	decreased by adding a longer cylinder block	increased by adding a shorter cylinder block	GS-0058
11	1612	B	One of the disadvantages of screw-type positive displacement rotary pumps is that they have _____.	high internal velocities	performance characteristics sensitive to viscosity change	low tolerance for entrained air and gases	low range of flows and pressures	
11	1613	D	In order to assure an output near the end of its compression stroke, the pressure developed in the high pressure cylinder of a reciprocating air compressor is _____.	the same as the line discharge pressure	below the line discharge pressure	constant throughout the discharge period	above the line discharge pressure	
11	1614	A	If the discharge valves on a refrigeration compressor are leaking badly, the compressor should _____.	run continuously	not start	have high discharge pressure	short cycle on the high pressure switch	
11	1615	B	Referring to Coast Guard Regulations (46 CFR), the emergency bilge system _____.	has no independent primary pump	is independent of the main bilge system	has a cross connection to the ballast system	is part of the independent bilge system	
11	1616	B	In order to prevent salt water contamination of the distillate in a flash-type evaporator, it is important to provide a positive seal around the _____.	spray caps	demisters	saltwater heater vents	steam supply orifice plate	
11	1617	A	Reset control is also referred to as _____.	proportional speed floating control	derivative control	rate control	proportional control	

11	1618	C	A pneumatic output from the device shown in the illustration may vary between 0 to 25 psi. The usable band of this range, (the pressure range used to generate a proportional movement of the associated control valve) will be _____.	0 to 25 psi	a 25 psi range	5 to 20 psi	with the movement of the pneumatic control valve occurring only between 10 to 15 psi	GS-0050
11	1619	D	Increasing the speed of a centrifugal pump will result in an increase in its capacity. Another means of increasing the capacity of a centrifugal pump is to increase the _____.	diameter of the discharge piping, with all other factors remaining the same	diameter of the suction piping, with all other factors remaining the same	width of the impeller only	diameter of the impeller	
11	1620	C	The purging of air from an electro-hydraulic steering gear unit is necessary when _____.	changing over to hand pump operation	engaging the trick wheel	the system has been filled with new oil	the rudder angle indicator does not match the helm position	
11	1621	C	When it is necessary to start an axial piston hydraulic motor under conditions where the hydraulic fluid is colder than the lowest temperature recommended for proper operation, you should operate the system at _____.	minimum speed until the normal operating pressure is reached	neutral stroke until all of the air has been vented	no load until the normal operating temperature is reached	maximum torque to attain rapid warm-up	
11	1622	B	A twin-screw, rotary, positive displacement pump is provided with timing gears. If it were possible to change the lead (pitch) of the screws, which of the following statements would represent the true effect on the pump characteristics?	The longer the lead, the lower the flow rate.	The shorter the lead, the higher the pressure potential.	The longer the lead, the lower the axial velocity.	The shorter the lead, the higher the inlet pressure requirements.	
11	1623	A	The piston displacement rate of a reciprocating air compressor can be modified by changing the _____.	piston speed	compressor capacity	volumetric efficiency	total pressure	
11	1624	C	If a refrigeration system, equipped with a reciprocating compressor, has a solenoid valve that is leaking during the 'off' cycle, this could cause _____.	low suction pressure	high superheat in the outlet coil	noisy compressor operation upon starting	refrigerant slugs in the receiver	

11	1625	A	Coast Guard Regulations (46 CFR) require the emergency bilge system to _____.	be independent of the main bilge system	be a part of the independent bilge system	have an independent priming pump	have a cross connection to the ballast system	
11	1626	A	Excessive air leakage into the suction side of a centrifugal pump would be indicated by which of the following operational problems?	The pump delivers full capacity when started, but gradually slackens off to an abnormally low flow.	The pump packing gland overheats after short operating periods.	The motor overcurrent protective device continually shuts the pump down.	Pounding noises can be heard at the pump suction chest.	
11	1627	D	A mode of control, whereby the position of the final control element is linearly proportional to the rate of change of the controlled variable, is called _____.	reset control	integral control	two position control	derivative control	
11	1628	A	Referring to the device shown in the illustration, if a reversed output were desired from a comparable unit as the system pressure increased, the necessary physical changes to the unit would be _____.	the offsetting of the power head, or motor, and the use of a reversing lever	the sensing or feedback connection made from below the power head or motor	the offsetting of the power head or motor, and the use of a reversing diaphragm	the exchange of the pilot valve with one that would be downward seating	GS-0050
11	1629	D	A dented race in an antifriction bearing could be caused by _____.	water in the bearing	abrasives in the lubricant	dirt in the bearing	vibration while the bearing is not in operation	
11	1630	B	While inspecting the steering system at sea, you should check for _____.	air bubbles in the sight glass	any leaks in the system	overtravel in the rudder angle indicator	lost motion in the rams	
11	1632	A	How does the viscosity of a fluid being pumped affect the operation of a spur gear pump?	The viscosity of the fluid is relatively unimportant in the pump operation.	The pump can only be used for fluids of high viscosity.	The pump can only be used for light oils.	The pump cannot handle fluids more viscous than lubricating oil.	
11	1633	A	Which of the following forms of energy is demonstrated through the process of combustion?	Chemical energy	Mechanical energy	Thermal energy	Electrical energy	

11	1634	C	If one box in a multiple box, direct expansion type refrigeration system was experiencing an excessively low temperature, this could be a result of _____.	liquid refrigerant returning to the compressor	excessive frost on the cooling coils	a leaking hand expansion valve	an oversized expansion valve	
11	1635	D	When securing an oxyacetylene cutting outfit for an extended period, you should close the _____.	hand valves on the torch only	cylinder valves only	cylinder valves and close torch valves with 4 to 5 pounds of pressure in the hoses	cylinder valves and close torch valves when pressure in hoses and regulators is zero	
11	1636	B	Pump efficiency may be lost as a result of _____.	air entering the pump through a pin hole leak in the discharge manifold	a leak in a gasket on the suction side of the pump	the suction valve in the wide open position	the pump being installed too close to the suction tank	
11	1637	D	A mode of control, whereby the speed of motion of the final control element is linearly proportional to the deviation of the controlled variable from set point, is called _____.	rate control	derivative control	two position control	integral control	
11	1638	C	A solenoid, direct-acting, three-position, spring-centered, directional control valve is used in a hydraulic system to control a linear actuator. With the actuator under load there is no movement. However, when the load is removed the actuator can be cycled in both directions, although slower than normal. Which of the statements listed is the probable cause?	One or both of the centering springs has broken and the spool has jammed in the valve body.	One or both of the solenoid coils has sustained an open.	The pump coupling is damaged and the pump is unable to attain its rated speed of rotation.	The pump coupling has sheared and the motor is overspeeding.	
11	1639	A	The capacity of a centrifugal pump can be increased by the installation of a larger diameter impeller. Another means of increasing the pump capacity is to _____.	increase speed	increase the size of the cardent assembly	reduce wearing ring clearances	change the pump to a 'close coupled' arrangement	

11	1640	A	While inspecting the steering gear at sea, you should check for _____.	any leaks in the system	accuracy of the rudder angle indicator	movement of the trick wheel	position of the six-way valve	
11	1641	C	In the illustration, the best way to make the pieces labeled "B" a locational interference fit is to _____.	Do nothing, this is already a locational interferance fit	drill the hole 0.010 inches larger to .260 inches	turn the shaft down .004 to .005 inches	heat the shaft until the nominal diameter is .250 inches	GS-0019
11	1642	C	A spur gear pump should be operated with the discharge valves _____.	slightly opened	throttled	fully opened	halfway opened	
11	1643	C	Which of the following forms of energy concerns the forces which bind atoms together in a molecule?	Thermal energy	Mechanical energy	Chemical energy	Electrical energy	
11	1644	A	Leaking suction valves in a refrigeration compressor are indicated by _____.	higher than normal suction pressure	lower than normal suction pressure	lower than normal evaporator temperature	noticeable increase in compressor noise	
11	1645	B	In an oxygen acetylene welding outfit, the torch tip orifice size _____.	depends on the hose length	determines the amount of acetylene and oxygen fed to the flames	can be varied by rotating the tip	depends on the regulator flow rate	
11	1646	B	Which of the following conditions would be hazardous if you were using two centrifugal pumps to discharge a flammable liquid?	Both pumps operating at the same speed and discharging into a common line.	Each pump operating at a different speed and discharging into a common line.	Both pumps operating at the same speed taking suction from a common line.	Each pump operating at a different speed and taking suction from a common line.	
11	1647	B	Greases are generally produced by _____.	reducing the temperature of an oil below its cloud point to create the gelatinous texture	saponifying a metal base, to which oil is then added and mixed under controlled temperature	reducing tallow 50°F below its pour point then mixing a base metal, such as barium, into solution	saponifying an aluminum base, to which tallow and oil are mixed into solution under a controlled temperature	

11	1648	D	In order to change the set point of the system using the illustrated device, you must _____.	rotate part "I" counterclockwise	change the compression of the spring located below part "H"	rotate part "E" until the operating pressure has changed by 5 psi	rotate part "D" in the direction necessary to produce the desired output pressure change in the system	GS-0050
11	1649	C	The oil in a cargo winch gear box should be sampled periodically to _____.	prevent the gear box from leaking	prevent the oil from becoming inflammable	make sure it has not become contaminated	make sure the motor bearings are lubricated	
11	1650	C	When the steering gear is in operation, you should _____.	check hydraulic oil levels every hour	check the rams for overheating	check for excessive oil leakage from rams	drain water from telemotor cylinders each watch	
11	1651	D	What class of screw thread is indicated with a machine screw described as 1/2-13 NC-2?	2-Jan	13	NC	2	
11	1652	D	The capacity of a rotary pump, delivering a constant viscosity fluid, will decrease when the discharge pressure is increased, due to _____.	decreased suction pressure	increased suction pressure	reduced slippage	increased slippage	
11	1653	B	Which of the following forms of energy is usually associated with the motion of large bodies or objects?	Chemical energy	Kinetic energy	Thermal energy	Electrical energy	
11	1654	D	A refrigeration system is equipped with a reciprocating compressor and a water cooled condensing unit. If the system is overcharged, the resulting high head pressure will be caused by _____.	the expansion valve overfeeding the evaporator	a leaking compressor suction valve	an incorrectly adjusted high pressure cutout	refrigerant flooding the condenser	

11	1655	A	Which of the following statements concerning braze welding is/are correct?	Braze welding is an exceptionally good method of repairing malleable (special heat-treated) iron.	A braze welded joint should be cooled immediately with cold water or forced air draft to reduce the intensity of the heat path.	Repairs to working parts or containers used in chemical processes, especially strong alkaline solutions, are effectively accomplished with braze welding.	All of the above.	
11	1656	D	If it were necessary for you to frequently replace the packing on the main condensate pump, the trouble could be the result of _____.	running at low speed for a long time	excessive condensate recirculation	defective casing gasket	worn bearings	
11	1657	C	Which indicator is used to determine the hardness of a grease?	Pour point	Drop point	Penetration number	Stability-consistency number	
11	1658	B	Referring to the device shown in the illustration, the port labeled "F" would indicate the _____.	supply pressure	control pressure to regulating valve	feedback signal pressure	manipulated input variable	GS-0050
11	1659	D	Winch gears must be maintained in proper alignment to prevent _____.	overheating of the lube oil	overspeeding of the motor	wear on the braking system	damage to the teeth	
11	1660	A	If a hydraulic pump is producing a noisy whine when in operation, the cause may be _____.	an air leak in the pump suction line above the oil level in the reservoir	low viscosity in the hydraulic fluid	an oil leak across the pump shaft packing	due to the wrong direction of rotation of the hydraulic motor	
11	1661	A	When using a deflecting beam torque wrench, the torque is _____.	read on a scale mounted on the handle of the wrench	read on a dial mounted on the handle of the wrench	indicated by an audible click	indicated by a release or break of the handle	
11	1662	D	The capacity of a rotary pump, when operated at a constant speed, will decrease with an increase in the pump _____.	discharge volume	suction pressure	steeped speed	rotor clearances	

11	1663	B	Which of the following statements represents the definition of energy?	Energy is work that has been accomplished.	Energy is the capacity for producing an effect.	Energy is work being done.	Energy is power.	
11	1664	C	An excessive charge of refrigerant in an air-cooled refrigeration system can cause _____.	oil foaming in the compressor	higher than normal suction and discharge pressures with a higher box temperature	higher than normal discharge pressure with a normal box temperature	the compressor to run continuously	
11	1665	D	With reference to the oxyacetylene welding of high carbon steels, hard-facing, and the welding of nonferrous alloys, such as monel, the best flame to use is termed a/an _____.	oxidizing flame	neutral flame	nitriding fusion	carburizing flame	
11	1666	B	Excessive wear on a centrifugal pump shaft sleeve will _____.	cause severe vibration when the pump is operating	cause excessive leakage past the packing gland	cause damage in the stuffing box	allow interstage leakage in the pump casing glands	
11	1668	D	The device shown in the illustration is known as a _____.	reverse acting pneumatic control valve	reverse acting pilot valve	direct acting excess pressure regulator	direct acting pilot valve	GS-0050
11	1669	B	Who is responsible for completing the Muster List ("Station Bill") or muster list and posting it in a visible area aboard the vessel?	Chief Engineer	Master	U. S. Coast Guard	None of the above	
11	1670	A	Inspection of a low pressure gear pump for cavitation will usually be indicated by a wear pattern _____.	along the inlet side of the housing	along the discharge side of the housing	at the extreme upper and lower peripheries of the housing	even throughout the entire periphery of the housing when matched machined gear sets are used	
11	1671	D	When renewing sections of pipe in a hydraulic system, the nominal pipe size of the piping always indicates the _____.	actual inside diameter	actual outside diameter	wall thickness	size for threaded connections	
11	1672	B	The output volume of a positive fixed displacement pump can be changed only by _____.	changing the angle of the tilting plate	changing the speed of the pump	moving the slide block and rotor	moving the shaft trunnion block	

11	1674	A	Which of the conditions listed may be an indication of an excessive amount of refrigerant circulating through the system?	Sweating of the compressor crankcase	Colder than normal solenoid valve	Frosting of the evaporator	Weeping of the purge valve	
11	1675	C	When welding or burning with a oxygen-acetylene, the acetylene working pressure must not exceed _____.	2 psi	5 psi	15 psi	25 psi	
11	1676	A	Excessive wear on a centrifugal pump shaft sleeve will _____.	cause new packing to be torn and scored	cause severe pump vibration at operating speed	damage the packing gland stuffing box	damage the pump casing interstage seals	
11	1677	A	The mode of control employed by an alarm circuit is a _____.	two position control	single speed floating control	proportional speed floating control	reset control	
11	1678	C	If a leak occurs between the areas labeled "B" and "J" of the control valve shown in the illustration, which of the following problems is most likely to occur?	The valve will open with a decrease in temperature below the set point of the liquid being heated.	The valve will close with a decrease in temperature below the set point of the liquid being cooled.	The valve will open with an increase in temperature above the set point of the liquid being heated.	The valve will close with an increase in temperature above the set point of the liquid being cooled.	GS-0043
11	1679	D	If you are given the job of adding hydraulic fluid to a mooring winch, and are not certain as to the type of fluid to use, you should _____.	add fluid that is the same color as the fluid in the reservoir	add turbine oil because it is always a good substitute	add any oil that has the same viscosity as the hydraulic fluid	check the winch manufacturer's instruction book	
11	1680	D	A gradual decrease in the discharge pressure of an operating hydraulic pump can be caused by _____.	the four-way control valve failing to shift	the bleeder valve sticking in the open position	cold hydraulic fluid	a clogged air vent filter on the oil reservoir	
11	1681	A	Which of the following statements describes the proper operation of a three way solenoid trip/dump valve on a two stage flash-type evaporator?	The valve normally requires a manual reset.	The valve will trip if the sea water feed temperature drops below 175°F.	The valve is interlocked to trip only on de-energization of the solenoid.	The valve will trip if the distillate is too warm.	
11	1682	D	The Bourdon tube-type pressure gage will begin to straighten out when pressure is applied due to the _____.	applied pressure being the greatest on the outer circumference	applied pressure being the greatest on the inner circumference	total force being the greatest on the inner circumference	total force being the greatest on the outer circumference	GS-0114

11	1683	B	The rate of heat transfer from a hot region to a cold region is affected most by the _____.	size of the heat sink	temperature difference between the regions	size of the heat source	total heat of the system	
11	1684	C	Which of the conditions listed is one indication of an excessive amount of refrigerant in the system?	Safety valve lifting	Prolonged running	Short cycling	Oil absorbed in the crankcase	
11	1685	D	When replacing a steam pressure reducing valve, what information is required for the selection?	Maximum and minimum inlet pressures	Reduced pressure or pressure range	Maximum and minimum continuous flow rates (lbs./hr.)	All of the above	
11	1686	D	According to Coast Guard Regulations (46 CFR), a welded repair to be made to a ships service air receiver, other than an emergency repair at sea, must be _____.	inspected and tested by the chief engineer before it may be returned to service	completed and then tested at least twice prior to notifying the Coast Guard to ask for a marine inspector	made with a backing strip to ensure full penetration	made only with the prior approval of the local Officer in Charge, Marine Inspection (OCMI)	
11	1687	A	The meat box temperature control circuit, as used in the ship service refrigeration system, is an example of _____.	two position control	single speed floating control	proportional control	reset control	
11	1689	B	Who is responsible for ensuring that someone is assigned to close the watertight doors in an emergency?	Coast Guard	Master of the vessel	Chief Engineer	Chief Mate	
11	1690	B	If the pump in a hydraulic system produces a low rumbling noise while in operation, this is a probable indication of _____.	internal system fluid leakage	air passing through the pump	strained hydraulic fluid	excess internal slippage	
11	1691	C	A three-way solenoid operated dump valve installed on a flash-type evaporator unit, will divert impure distillate to the bilge _____.	only if the cell selector switch is positioned to monitor the first stage distillate outlet	only if the cell selector switch is positioned to monitor the final stage distillate outlet	regardless of the cell selector switch position	only if power to the salinity panel is interrupted	

11	1692	B	Operating a rotary gear pump far below its rated speed when handling low viscosity liquids, will cause its volumetric efficiency to _____.	increase steadily as the moving gears develop less vibration	decrease to where the pump no longer develops flow	remain unchanged due to its positive displacement characteristics	fluctuate due to the amount of slip variation	
11	1693	C	Which of the following statements is correct concerning heat transfer?	Heat is given off from a high temperature region known as a heat sink.	Heat transfer rate is affected most by the size of the heat sink involved.	Heat transfer rate is affected most by the temperature difference between the heat source and the heat sink.	Heat transfer by radiation will occur only by mass motion of a fluid substance.	
11	1694	D	When a refrigeration compressor has developed a high head pressure as a result of a refrigerant overcharge, you should _____.	increase the amount of cooling water to the condenser	decrease the amount of cooling water to the condenser	add more refrigerant to the system	remove some refrigerant from the system	
11	1695	A	On tank vessels equipped with power operated cargo tank valves, the type of power actuator most commonly used is _____.	hydraulic	electric	steam	diesel	
11	1696	A	Excessive wear on the packing rings nearest the pump packing gland, while the rings nearest the impeller remain in good condition, is caused by _____.	failure to insert and individually seat the rings, one ring at a time	insufficient tightening of the packing gland	failure to tighten the packing gland in a single adjustment	cutting the rings nearest the gland too short	
11	1697	D	Which of the following elements is common to all indicating instruments?	An electrical input	A bourdon tube	A reset button	A calibrated scale	
11	1698	D	With regards to the device shown in the illustration, the parts labeled "D" and "I" function together to _____.	lift the valve disk as the controlled temperature increases	lower the valve disk as the controlled temperature decreases	act as an accumulator for the steam if a sudden increase in steam supply is required	balance the steam supply pressure and cancel its affect on the valve disk	GS-0043

11	1699	C	When the entire plate "X" of a vessel's hull is to be replaced, as shown in the illustration, four sections of the remaining welded seam (i.e., a, b, c, d) should be burned out prior to welding in the new plate. This is done to _____.	simplify the fit up of the new plate	give the welder a starting point when welding in the new plate	minimize locked in stress created when the new plate is welded	accommodate lifting lugs used to jack the new plate into position	GS-0112
11	1700	B	Leakage of hydraulic fluid from around the shaft of a hydraulic motor may be caused by _____.	permanent loss of pump suction	worn shaft seals	high level in the oil sump	low motor RPM	
11	1701	D	In a flash-type evaporator, an electrical salinity cell would be installed in the _____.	distillate outlet from the distillate cooler	distillate inlet to the distillate cooler	condensate drains from the distiller feedwater heater	all of the above	
11	1702	B	If the viscosity of the liquid being transferred remains constant as the discharge pressure increases, the rotary pump _____.	capacity will increase	capacity will decrease	suction pressure will increase	suction pressure will decrease	
11	1703	C	When metal is tempered, it becomes _____.	harder	corrosion resistant	less brittle	more brittle	
11	1704	C	If the suction pressure at the refrigeration compressor is below normal, the cause can be _____.	refrigerant overcharge	overfeeding by the expansion valve	a restricted suction strainer	due to short cycling of the compressor	
11	1705	C	On tank vessels, which of the listed valve types is most commonly used in conjunction with hydraulically actuated controls?	gate valve	globe valve	butterfly valve	nonreturn valve	
11	1706	D	Coast Guard Regulations (46 CFR) prohibit air compressors from being located in _____.	a space within three meters of a cargo valve	a space in which cargo hose is stowed	an enclosed space containing cargo piping	all of the above	
11	1707	B	'Offset' is an inherent characteristic of which of the following types of control modes?	Two position	Proportional	Reset	Rate	
11	1708	B	In order to increase the set point of the control valve as illustrated, used to regulate the output temperature of a hot water heater, the part labeled _____.	"K" must be rotated clockwise	"A" must be rotated counterclockwise	"A" must be rotated clockwise	"K" must be rotated counterclockwise	GS-0043

11	1710	D	If dirt is allowed to contaminate the sump of a hydraulic deck crane, which of the following problems will occur?	All the seals in the hydraulic lines will immediately blow out.	The lifting capacity of the crane will be immediately reduced by 70%.	The sheathing on the hydraulic lines will fracture.	The internal parts of the pump and hydraulic motor will wear excessively.	
11	1711	D	Where would a salinity cell be installed in a double-effect distilling plant?	Distillate pump discharge	Tube nest drain pump discharge	Air ejector condensate drain	All of the above	
11	1712	A	Which of the listed conditions will occur if the discharge pressure of a rotary pump is increased from the designed 50 psi to 300 psi, while maintaining the same RPM?	The pump capacity will be decreased.	The pump capacity will be increased.	Pump efficiency will be increased.	Internal liquid slippage will be reduced.	
11	1713	D	Reheating a hardened component to a temperature lower than the hardening temperature and then cooling it is known as _____.	low temperature hardening	case hardening	annealing	tempering	
11	1714	C	If the suction pressure for an operating refrigeration compressor is below normal, the cause may be _____.	an excess of liquid refrigerant	the expansion valve overfeeding	a fouled compressor suction strainer	the compressor short cycling	
11	1715	B	The flame screens installed on sewage system tank vents prevent explosions by _____.	allowing the escape of flammable vapors	dissipating the heat of a flame	absorbing any flammable vapors in the vicinity	preventing flammable vapors from entering the tank	
11	1716	C	One of the many problems occurring with centrifugal pump shaft packing is the excessive wear on the rings nearest the packing gland. If the rings nearest the impeller remain in good condition during the same operating period, the wear is most likely caused by _____.	insufficient lubrication of the lantern ring	packing rings rotating in the stuffing box	overtightening the packing in one adjustment	some rings being cut too short	
11	1717	D	Which of the following definitions can be used to define the term 'offset' as a characteristic of controller action?	The period of time in which the set point and the control point coincide.	The periodic change between the set point and the control point.	The variable difference between the set point and the control point.	The constant difference between the set point and the control point.	

11	1718	B	The illustrated control valve would be more suitable for _____.	steam flow control to the air ejectors	temperature control of a fluid being heated	temperature control of a fluid being cooled	steam flow to the turbine driving a pump	GS-0043
11	1719	A	When a new section of shell plating is being installed, the proper weld sequence must be followed to _____.	minimize shrinkage stresses and harmful distortion	ensure that all weldments are downhand	provide the greatest restraint in the weld	ensure all horizontal weldments are completed first	
11	1721	C	In the illustration, the welded neck flange is attached to the pipe by a _____.	double fillet weld only	plug and slot weld	V-weld over a backing ring	U-weld over a backing ring	GS-0078
11	1722	B	A salinity indicator is used to determine the _____.	cause of salt contamination	location of salt water contamination	chemical makeup of feedwater	level of alkalinity in condensate	
11	1723	D	In order to tighten the bolts of a crankpin bearing to the exact tension specified by the engine manufacturer, you should use a/an _____.	hook spanner	dial wrench	offset box end	torque wrench	
11	1724	B	Which of the conditions listed could cause excessively low refrigerant pressure at the compressor suction?	Insufficient flow of condenser cooling water.	The system is low on refrigerant.	The solenoid valve to the chill box is 'frozen' in the open position.	The high pressure cutout switch is inoperative.	
11	1725	B	Oil sprays on to a hot piece of machinery, catches fire and causes $35,000 damage to your vessel. By law this must be reported to the _____.	nearest Coast Guard unit	Officer in Charge, Marine Inspection at the first port of arrival	principal surveyor of the American Bureau of Shipping at the next U.S. port	U.S. Salvage Association Survey at the next U.S. port	
11	1726	B	Coast Guard Regulations (46 CFR) require safety and relief valves for air service to be provided with a substantial lifting device, capable of lifting the disk from its seat when the pressure in the vessel is _____.	50% of that at which the valve is set to blow	75% of that at which the valve is set to blow	110% of that at which the valve is set to blow	125% of that at which the valve is set to blow	

11	1727	A	Which of the following definitions best describes sensitivity as a characteristic of controller action?	The ratio of the output in response to a specified change to the input which caused it.	The steady state difference between the control point and the value of the controlled variable corresponding to the set point.	The variation of the manipulated variable produced by the mode of control.	The time difference between the input change and the output change of the controller.	
11	1728	B	With regards to process control, the operation of the device shown in the illustration can be characterized by the term _____.	proportional control only	proportional plus reset control	reset control only	on-off control only	GS-0045
11	1729	D	Sounding tubes and access openings for fuel oil tanks on MODUs are permitted by Coast Guard Regulations (46 CFR) to be located in which of the listed spaces?	Washrooms	Laundries	crew lounge	none of the above	
11	1730	C	If the relief valve on the discharge side of a hydraulic pump lifts, the cause could be _____.	a low load on the unit	a clogged pump suction strainer	a blockage in the line between the pump and hydraulic motor	the hydraulic motor turning too fast	
11	1731	D	A welding electrode is marked E-6010, this designation means that _____.	the electrode may be used in the flat position only	the minimum tensile strength of the weld metal will be 70,000 psi	either insulated or uninsulated electrode holders may be used	the electrode is to be used for shielded metal arc welding	
11	1732	C	Before power to a lathe is turned on, it is a good shop practice to first hand feed the carriage to ensure _____.	the carriage is lubricated	the lathe is level	all locking devices have been released	the workpiece is secure in the lathe	
11	1733	D	Which of the tools listed should be used with the set screw shown as figure "F" in the illustration?	Phillips head screwdriver	Spanner wrench	Crescent wrench	Allen wrench	GS-0080

11	1734	D	In an operating, water-cooled, multi-box refrigeration system, both low discharge and high suction pressures are being simultaneously experienced. The probable cause for this condition is a/an _____.	overcharge of refrigerant in the system	fouled shell-and-tube condenser	improper superheat adjustment on the low side	discharge relief valve leaking back to the suction side	
11	1735	B	Dimension "X" indicated on the architects scale, shown in the illustration, will be equal to _____.	5 feet 3/4 inch	5 feet 4 inches	83 feet	93 1/4 feet	GS-0023
11	1736	C	Charring or glazing of the inner circumference of the packing rings in a centrifugal pump, is caused by _____.	undertightening the packing	failure to seat the packing rings	insufficient lubrication of the packing	packing ring rotation	
11	1737	A	A mandatory characteristic of a pure amplifier is that _____.	the form of the input and output energies must be the same	the ratio of the output to the input must always be greater than the numerical value of 'one'	the form of the input and output energies must be different	the action must be either integral or derivative	
11	1738	C	A grease drop point is _____.	how far a standard metal cone will penetrate into the sample in five seconds when dropped	how uniform and thick the spread of an ounce of grease is when dropped from a height of five feet	the temperature that a sample of grease begins to liquefy	the length of time a 50 gram sphere will be held in place from the underside of a surface coated with 25 millimeters of the grease sample	
11	1739	D	A drill that wobbles while the drill press is in operation may _____.	be bent	have a severely worn shank	have been placed in the chuck off center	all the above	
11	1740	B	Setting the relief valve opening pressure in a hydraulic system lower than the required operating pressure will result in _____.	accelerated action of the system components	overheating of the system	overspeeding of the hydraulic pump	extended system life	

11	1741	D	The high strength structural steel, such as Grade DH 32, when used as part of the main deck plating, is noted on the vessel's Certificate of Inspection. The information is important because _____.	the properties of DH 32 steel may interfere with the operation of some cathodic protection systems	the properties of DH 32 steel will affect the ability to properly ground electrical apparatus in the immediate area	any electrical equipment mounted on DH 32 steel plating is required to be insulated from the plating and internally grounded instead	the welding of any DH 32 steel requires special welding procedures	
11	1742	A	Which of the devices shown in the illustration should be used with a bridge gage?	A	B	C	D	GS-0073
11	1743	A	Large size pipe can be easily rotated with a _____.	chain pipe wrench	monkey wrench	basin wrench	strong back	
11	1744	D	If a refrigeration compressor had developed a high suction pressure, the problem could be a result of _____.	a minor accumulation of air or noncondensable gases in the system	a leaking king valve	a clogged subcooler	liquid refrigerant flooding back from the cooling coil	
11	1745	C	If you have to completely grind a new point on a high speed drill, which of the following could happen if it is cooled in cold water immediately after grinding?	The edges will be dulled.	The 59° angle will be lost due to metal contraction.	Cracks may appear in the metal.	The cutting surface will become annealed by the cold water.	
11	1746	B	According to Coast Guard Regulations, if a pressure vessel, such as a ships service air tank, has defects which may impair its safety, the tank shall be _____.	hydrostatically tested at a pressure equal to the design pressure of the tank	hydrostatically tested at a pressure equal to 1 1/2 times the maximum allowable working pressure of the tank	pneumatically tested at a pressure equal to the working pressure of the tank	pneumatically tested at a pressure equal to 1 1/2 times the design pressure of the tank	
11	1747	C	A pure transducer utilizes _____.	integral action	rate action	proportional action	derivative action	
11	1749	A	Steam tables can be used to obtain the _____.	values for properties of water and steam vapor at various conditions	specific fuel consumption under steady steaming conditions	steam generating capacity of a vessel's boilers	mechanical efficiency of the main unit	

11	1750	D	The rate of heat transfer between the hot and cold fluids passing through a shell-and-tube type heat exchanger will _____.	remain constant along the tube's length	be greatest in a single pass counter flow heat exchanger	remain constant throughout the heat exchanger	vary from section to section throughout the heat exchanger	
11	1751	B	Which illustration correctly depicts a double bevel groove weld?	4A	3B	4B	6B	GS-0077
11	1752	B	A tool used for measuring, or laying out angles is called a _____.	trammel	protractor	micrometer	caliper rule	
11	1753	B	A coolant is usually used when cutting metal in a power hacksaw to prevent the _____.	heat of friction	blade from overheating	blade from bending	cut from clogging	
11	1754	C	If a refrigeration compressor had a higher than normal suction pressure, the problem could be a result of _____.	a minor accumulation of air or noncondensable gases in the system	a constant loss of refrigerant	leaking compressor suction valves	a slightly higher than normal liquid level in the receiver	
11	1755	A	A pneumatic pressure tank is installed in a sanitary system to _____.	reduce excessive cycling of the sanitary pump	prevent the sanitary pump from losing suction	provide a higher pressure in the system then the pump can deliver	increase water flow through the system	
11	1756	D	One of the many troubles occurring with centrifugal pump shaft packing is the excessive wear on the rings nearest the packing gland, while the rings nearest the impeller remain in good condition. This wear may be caused by _____.	air entrained in the fluid pumped	packing rings rotating in the stuffing box	some packing rings being cut too short	improper adjustment of the gland nuts	
11	1757	B	While calibrating a bourdon tube pressure gage, all readings are found to be 10 pounds higher throughout its entire range. An adjustment should be made by _____.	increasing the sector to pivot point length	resetting the pointer on its shaft	decreasing the sector to pivot point length	increase the set screw length	

11	1758	A	Return lines to hydraulic systems reservoirs should _____.	end the return line as far as practicable from the pump suction	end the return line as close to the pump suction as possible	provide a "P" or "S" trap in the return line as close to the reservoir as possible to trap sediment from entering the tank	connect the return lines directly to the cleanout and inspection plates to limit the number of openings on the reservoir	
11	1759	C	How often must a U.S. Coast Guard engineering license be renewed?	Annually	Every 3 years	Every 5 years	Every 10 years	
11	1760	C	The temperature differential occurring between the inlet temperature of the fluid to be cooled and the outlet temperature of the cooling medium in a shell-and-tube heat exchanger is greatest in which of the flow designs listed?	Cross	Counter	Parallel	Circular	
11	1761	C	The designation E7028-A1 is typically located on an arc welding electrode. Which of the listed letters and/or digits correctly identifies the welding position for which the electrode is recommended?	E	70	2	A1	
11	1762	C	The center head of a combination square set is used to _____.	check degrees of angle	find right angles	locate the center on round stock	check the angle of thread cutting tools	
11	1763	B	A pipe or Stillson wrench should only be used on _____.	hexagonal objects	round objects	square objects	flat objects	
11	1764	B	High suction pressure to a refrigeration system compressor is caused by _____.	the expansion valve is insufficiently opened	the expansion valve being open too wide	the king valve is insufficiently open	a dirty dehydrator	
11	1765	A	Which material can be drilled at the highest speed?	Aluminum	Medium cast iron	Copper	High carbon steel	
11	1766	C	Which of the pressure vessels listed is required under Coast Guard Regulations (46 CFR) to be hydrostatically tested once every three year period?	Tubular heat exchangers	Hydraulic accumulators	Air receivers with no manholes or other inspection openings	Bulk storage tanks for refrigerated liquefied CO2	

11	1767	C	Why is it necessary to spin the piston of a dead weight gage tester while carrying out the calibrations of pressure gages?	Prevent formation of a vacuum.	Eliminate the formation of air bubbles.	Prevent the piston rod from sticking.	To assist in calibrating the dead weight tester.	
11	1770	C	The general purpose of a heat exchanger is to _____.	eliminate hot air from the condenser	maintain steady pressure in a system	heat, or cool one fluid by means of another fluid	reduce the engine room temperature in tropical climates	
11	1771	C	To ensure a good weld, post heating is required whenever an arc weld repair is made _____.	with a straight polarity rod	with a reverse polarity rod	to a cast component (casting)	to a part of the ship's main structure	
11	1772	A	To get an accurate measurement using a 12 inch machinist's steel rule, you should measure _____.	from the one inch graduation mark	from the zero end on the scale	on the narrow edge of the rule	on the unmarked edge of the rule	
11	1773	A	A pipe, or Stillson wrench functions best when _____.	the bite is taken midway up the jaw teeth	the wrench jaws are at the widest open setting	a maximum pull is exerted with one hand	an extension is placed on the wrench handle	
11	1774	D	Which of the following problems could cause the high pressure cutout switch to shut down the compressor in a refrigeration system?	A shortage of liquid refrigerant.	Excessive frost on the evaporator.	Excessive condenser cooling water.	Insufficient condenser cooling water flow.	
11	1775	D	Which of the following procedures is used to bring a hole to finished size with high accuracy?	Coring	Boring	Broaching	Reaming	
11	1776	C	A crackling noise coming from a centrifugal pump casing is an indication of _____.	insufficient packing	an oversized lantern ring	excessive suction lift	reversed pump rotation	
11	1777	A	When a bourdon tube pressure gage is tested and found to be inaccurate, adjustment must be made to obtain the correct readings. The distance between the pointer spindle and the link connection to the sector gear will be changed when the _____.	pointer does not travel the correct distance as test weight is added	proportional amount of pointer travel for each weight added is correct, but the total reading is wrong	reading is correct only at the working pressure	readings are correct only at the minimum and maximum ends of the scale	

11	1778	A	A simple hydraulic system is made up of a pump, relief- valve, manual-control valve, and a linear actuator. If the piping connected to the actuator 'cap end' is accidentally crushed to one half of its diameter, this will result in _____.	slower actuator retraction speed	faster actuator retraction speed	faster actuator extension speed	all of the above	GS-0107
11	1779	A	The heat required to raise the temperature of a unit mass of a substance one degree is called its _____.	specific heat capacity	latent heat	entropy	adiabatic heat	
11	1780	D	Which of the following statements represents a disadvantage associated with a spool-type, solenoid direct operating, directional control valves?	Back pressure on the outlet line must be steady to drain the lower spool chamber.	The valve sealing surface is often damaged through excessive throttling action.	The spool does not have hydrocushion capabilities to handle shock.	Close fitting spools occasionally stick due to the accumulation of hydraulic oil residues.	
11	1781	A	The welding symbol reference line using the inverted "V", indicates _____.	a "V" groove weld is to be made	the arrow side of the weld is to be surface finished	the opposite side of the weld is to be surface finished	the first pass of the weld is to be back gouged	GS-0076
11	1782	A	The tool shown in the illustration is called a _____.	center gage	thread gage	crotch center	drill gage	GS-0072
11	1783	B	Needle nosed pliers are best used to _____.	strip insulation from electric wire or cable	grasp items positioned in tight places	cut recessed cotter pins	tighten electrical wire clamps	
11	1784	D	If the water failure switch should fail to shut down the refrigeration compressor, the refrigerant pressure will build up in the high pressure side of the system to the point where the _____.	compressor discharge valves would be damaged	condenser tubes would rupture	system relief valve would open	high pressure cutout switch would function	
11	1785	C	Which of the following surfaces will not develop a hydrodynamic film where motion is accompanied by any appreciable loading?	Curved surfaces	Flat nonparallel surfaces	Flat inflexible parallel surfaces	All of the above surfaces will sustain a hydrodynamic film while in motion under a load	

11	1786	B	If you heard a 'crackling' noise in a centrifugal pump, the most probable cause of the problem would be _____.	insufficient speed	cavitation	excess discharge pressure	excessive net positive suction head	
11	1787	A	A proportional band, or range adjustment of a bourdon tube pressure gage is accomplished by _____.	adjusting the effective moment arm length between the bourdon tube and the quadrant gear fulcrum	adjusting the pointer position relative to the shaft on which it is mounted	changing out the pointer pinion	flattening the cross-section of the bourdon tube	
11	1788	B	An electric motor driven (torque producing) remotely controlled, valve actuator is installed on the high sea suction with the 'red' indicator light illuminated. When the 'open' push button is depressed, the 'green' indicator light comes on momentarily and then goes out, without any appreciable movement of the valve. Which of the following actions should be carried out?	Alternately depress the 'close' and 'open' buttons to get the valve open.	Manually engage the actuator handwheel and 'break' the valve disk from its seat, then push the 'open' button.	Secure power, tag out system and make repairs because the valve stem has sheared.	Secure the breaker to this device, then switch the motor leads and push the 'open' button.	
11	1789	B	The unlicensed crew requirements listed on the Certificate of Inspection reads as follows: 3 firemen/watertenders; 3 oilers. The vessel is about to depart on a foreign voyage, and has in the crew: 3 firemen/watertenders, 2 oilers, and one man, whose merchant mariner's document is endorsed QMED, any rating. You should _____.	call the port captain and request another oiler	sail because your crew requirements are filled	request a waiver from the Coast Guard	check if any of the firemen have enough time for an oiler's endorsement	
11	1790	B	Which of the following problems will occur if the internal drain at either end of a hydraulic, two-way, spool-type directional control valve cylinder were to become plugged?	The reservoir would become vapor bound.	The valve would be placed in hydraulic lock.	The spring loaded relief ports would open.	The buffering chambers would be unable to function.	
11	1792	B	Which of the devices listed can be used to measure any angle on a blueprint or drawing?	Vernier	Protractor	Planimeter	Compass	

11	1793	B	A bronzed sleeve is secured to the propeller tail shaft by _____.	keying	shrinking	threading	pressing	
11	1794	B	An increasing head pressure in a refrigeration system, without any corresponding change in the cooling water inlet temperature, would probably be caused by _____.	restriction in refrigerant piping	air and noncondensable gases in the condenser	water in the refrigerant	flooding back of liquid refrigerant from the evaporator	
11	1795	A	In the illustration shown, the operating piston "H" in the valve has a larger surface area than the main valve disc to allow _____.	control action to be accomplished with a relatively small amount of high pressure steam	control action to be accomplished by a relatively small amount of low pressure steam	complete compression of the main valve spring "F" when pressure adjustments are made	free movement of the auxiliary valve "B" during a change in operating pressure	GS-0044
11	1797	B	The zero set point adjustment of a bourdon tube pressure gage is accomplished by _____.	adjusting the effective moment arm length between the bourdon tube and the quadrant gear fulcrum	adjusting the pointer position relative to the shaft on which it is mounted	adjusting the pointer position by bending the free end of the pointer	flattening the cross section of the bourdon tube	
11	1798	B	Which of the conditions listed will cause the hydraulic pump relief valve to remain open during the operation of the system?	Bleeding the gas charge from the accumulator.	Reducing the relief valve spring compression.	Removing the restrictor valve check-valve spring.	Opening the restrictor valve variable orifice by one third of a turn.	GS-0106
11	1799	C	How many BTUs must be added to one pound of water at 32°F to raise the temperature to 212°F?	16 BTU's	144 BTU's	180 BTU's	970 BTU's	
11	1800	A	Prolonged operation of a hydraulic pump in a cavitating condition can cause _____.	the hydraulic fluid to become overheated	the fluid motor to become overloaded	the relief valve to hum	a wide variation in fluid pressure surges	
11	1802	B	When the axis of the pinion gear is parallel to the center of the bevel gear, similar to right angle drive gear shown in the illustration the drive is identified as _____.	hypoid type	spiral bevel type	zerol type	straight-tooth bevel type	GS-0128

11	1803	B	If you were uncertain as to what type of gasket material to install in a pipeline, you should _____.	turn the old gasket over and install it again	check the ship's plans or manufacturer's instructions	leave the old gasket in and cover it with Permatex	make up the joint without a gasket until you can check with the chief	
11	1804	A	If the refrigeration compressor was developing higher than normal discharge pressure, this could be a result of _____.	air or noncondensable gases in the system	leaking discharge valves	leaking suction valves	liquid refrigerant flooding back from the cooling coil	
11	1805	C	The tail shaft is usually supported by the _____.	spring bearings	tail bearings	stern tube bearings	propeller bearings	
11	1806	D	Frequent bearing replacement in a centrifugal pump, due to rapid bearing wear, can be a result of _____.	leakage through the pump stuffing box gland	high net positive suction head	long periods of cavitation	misalignment	
11	1807	D	Which of the following control modes is generally not used by itself?	Two position action	Proportional action	Integral action	Derivative action	
11	1808	D	During the repair and overhaul of the pump relief valve, used in a hydraulic system, the set point was reduced by 100 psi. Which of the following statements describes the result of the set point being lowered?	The pump discharge pressure will remain at the same pressure prior to the relief valve being repaired.	The solenoid controlled, three-position, spring centered control valve response will be quicker.	The fluid viscosity will increase during operation.	The movement of any system actuator will now be slower.	
11	1809	D	A drop test is carried out on a sample of grease by _____.	allowing a suspended cone to drop into a sample of grease for five seconds and determining the depth of penetration	dropping a one ounce grease sample from one meter, and observing the resulting spread pattern, uniformity of thickness, and consistency of texture	allowing a sample of grease to drop into a cup at ambient temperature and determining the time necessary for this to occur	determining the temperature at which a grease sample liquefies when heated and drops from a cup through a bottom orifice	
11	1810	D	Cavitation in a hydraulic pump is indicated by noisy pump operation and can be caused by a/an _____.	high fluid level in the reservoir	hydraulic fluid low floc point	excessive discharge pressure from the pump	clogged suction strainer in the reservoir	

11	1811	D	When welding mild steel with a shielded metal-arc electrode, and getting only shallow penetration, you should _____.	use a lower current	speed up your electrode travel	use larger electrodes	increase the amperage	
11	1812	C	The three basic parts of any eductor are the nozzle, the suction chamber, and the _____.	injector	compressor	diffuser	siphon	
11	1813	A	Which of the following statements is true concerning the hydrodynamic wedge developed by lubricating oil?	The wedge-shaped oil film's load carrying capacity is determined by its length and thickness.	The load carrying capacity is inversely proportional to the velocity of the fluid.	Pressures throughout the oil wedge are uniform.	The load carrying capacity is directly proportional to the thickness of the oil film.	
11	1814	C	If the head pressure of a reciprocating refrigeration compressor is excessive, _____.	the relief valve should open before the high pressure cutout	the relief valve should open and allow the excess refrigerant to flow to the receiver	the high pressure cutout switch should operate before the relief valve opens	you should close in on the suction valve	
11	1816	A	Pitting in the suction areas of a centrifugal pump bronze impeller is usually caused by _____.	cavitation	electrolysis	abrasion	corrosion	
11	1817	D	The control mode in which the final control element is moved from one of two fixed positions to the other is known as _____.	dead band action	neutral zone action	range	on-off action	
11	1818	C	Radial thrust developed in high pressure centrifugal pumps can be eliminated by the use of _____.	single volutes	a single diffusion nozzle	a diffusion ring	a modified Kingsbury thrust bearing	
11	1819	D	A 'Report of Marine Accident, Injury or Death', Coast Guard form 2692, must be filed with the Officer in Charge, Marine Inspection when a shipboard casualty results in _____.	the incapacitation of an injured crewman	the death of a yard or harbor worker in the engine room	the incapacitation of a yard worker due to a boiler flareback	All of the above.	
11	1821	C	The welding process using an electric arc developed between a flux covered electrode and the metal being welded is known as _____.	flux cored arc welding	resistance spot welding	shielded metal arc welding	submerged arc welding	

11	1822	B	Devices which utilize the rapid flow of a fluid to entrain another fluid and thereby move it from one place to another are called _____.	mixed flow pumps	jet pumps	volute pumps	centrifugal pumps	
11	1823	D	Which of the following statements indicates compliance with Coast Guard Regulations (46 CFR) concerning a vessel's bilge system?	All bilge manifold suctions shall be capable of being locally controlled from above the floor plates.	The system must be capable of operation under all practicable conditions after a casualty, whether the vessel is upright or listed.	Peak tanks, chain lockers, and decks over peak tanks may be drained by eductors, ejectors, or hand pumps.	All of the above.	
11	1824	A	One cause of high head pressure occurring in a refrigeration system can be _____.	insufficient cooling water flow to the condenser	a low refrigerant charge in the system	the liquid valve is open too much	high evaporator superheat	
11	1825	B	In the illustration, line "J" is used to depict a _____?	hidden line	cutting plane line	outline	centerline	GS-0006
11	1826	A	The usual symptoms of cavitation in a centrifugal pump is _____.	crackling noise and vibration	an increase in discharge pressure	an increase in suction pressure	lifting of the relief valve	
11	1827	C	A control action which produces a corrective signal relative to the speed at which the controlled variable is changing is known as _____.	reset action	integral action	derivative action	proportional action	
11	1828	D	The diffusion ring installed in many high pressure centrifugal pumps, such as feed pumps, _____.	eliminates axial thrust	imparts kinetic energy to the water passing through the pump	alleviates the need for a double suction impeller	eliminates radial thrust to the impeller	
11	1829	D	The substance primarily responsible for heat loss in the combustion process is _____.	sulfur	carbon	hydrogen	nitrogen	
11	1830	C	Air trapped in the hydraulic fluid of a steering system may be indicated by _____.	the steering pumps overspeeding	a jammed open relief valve	a constantly occurring improper rudder response	excessive ram pressure	

11	1831	A	Setting up a welding job, where the work is the positive pole and the electrode is the negative pole for the arc, is known as a/an _____.	straight polarity welding circuit	inert-arc welding circuit	shielded-arc welding circuit	reverse polarity welding circuit	
11	1832	A	The steam supplied to operate a steam driven reciprocating pump is usually obtained from the _____.	desuperheated steam line via a reducing station	auxiliary exhaust line	main steam line via a reducing station	contaminated steam generator	
11	1833	C	Which of the following statements concerning the operation of steam pressure reducing valves is correct?	Reducing station relief valves must be lifted by hand at least once a watch.	The cut out valve at the outlet of the reducing valve should be throttled when in operation.	Reducing valves should be warmed-up and drained before they are adjusted.	Reducing valves are absolutely reliable and require no routine maintenance.	
11	1834	C	Which of the problems listed would cause the discharge temperature of an R-12 refrigeration compressor to increase?	Thermal expansion valve frozen open.	Suction gas heat exchanger bypassed.	Condenser clogged or fouled.	High pressure cutout switch inoperative.	
11	1835	C	A plug tap is correctly used for _____.	starting threads in a hole	reversing the threads in a hole	the second cut when threading a blind hole	finishing the threads in a blind hole	
11	1836	A	If it were necessary for you to frequently replace the bearings of the condensate pump, the trouble could be the result of _____.	misalignment	a plugged water seal line	salt water contamination of the condensate	worn wearing rings	
11	1837	A	A control action which produces a corrective signal relative to the length of time the controlled variable has been away from the set point, is known as _____.	integral action	proportional action	rate action	derivative action	
11	1838	D	With regards to pilot controlled pneumatic regulating valves, the spring force of the regulating valve should be adjusted to _____.	maintain the required system set point	maintain the value of the manipulated variable	maintain the output steam pressure of the system	the operating range of the pilot output loading pressure	GS-0051

11	1839	A	When renewing only a portion of an entire hull plate with an insert plate, which of the listed guidelines should be followed?	The insert plate should cover at least one full frame space.	The lines of new welding should, where possible, lie in existing lines of welding.	The corners of the insert plate should be square.	The insert plate should be at least 9/16 thick.	
11	1840	A	An O-ring seal in a hydraulic system will begin to leak when it has lost its interference fit due to _____.	compression set or wear	low fluid pressure	high fluid flow	low fluid temperature	
11	1841	C	When welding, a flux is used to _____.	control penetration	reduce metal fatigue and warpage	reduce oxidation	increase heat transfer	
11	1842	D	Some heavy duty screwdrivers are made with a square shank to _____.	allow it to be used as a pry bar	prevent the shank from bending	permit striking with a hammer	allow turning with a wrench	
11	1843	B	When drilling holes in metal, which of the materials listed does not have to be lubricated?	Tool steel	Cast iron	Mild steel	Cast steel	
11	1844	B	Low compressor head pressure in a refrigeration system can be caused by _____.	insufficient condenser cooling water	excessive condenser cooling water	air in the refrigeration system	excessive refrigerant in the system	
11	1845	C	The device used to retain the packing, that keeps water from entering the ship through the opening where the propeller shaft passes through the hull, is called a _____.	packing nut	hawsepipe	stuffing box	seal cage	
11	1846	D	If misalignment between a pump and its driving source exceeds that specified by the pump manufacturer, the shaft _____.	flexible coupling will absorb all such misalignment	total end float travel will be excessive	lateral float will be greatly increased	bearings will be overloaded and will fail	
11	1847	B	The control mode where the position of the final control element has a linear relationship with the position or value of the controlled variable, is known as _____.	two position control	proportion control	reset control	rate control	
11	1848	B	One function of a replenishing pump installed in many pressure-closed hydraulic systems, is to supply fluid flow to _____.	the reservoir	a servo control circuit	position a manually controlled valve	the main system accumulators under all operating conditions	

11	1849	C	The duties of a chief engineer upon taking charge of the department include _____.	preparing a list of engine department personnel for the Master's signature	taking a complete personal inventory of all engine room spare parts	determining if any vital engine room equipment is inoperative	obtaining a valid Certification of Inspection from the Coast Guard	
11	1850	D	What type of pump is shown in the illustration?	Double screw rotary pump with suction at the center for hydraulic balance	Triple screw rotary pump with suction at the center for hydraulic balance	Double screw rotary pump with end suction	Triple screw rotary pump with end suction	GS-0144
11	1851	A	Coast Guard regulations for small passenger vessels of less than 100 gross tons require drydocking or hauling out at intervals not to exceed 18 months if operated in _____.	saltwater a total of more than 9 months in the 18 month period since it was last drydocked or hauled out	fresh water a total of more than 9 months in the 18 month period since it was last drydocked or hauled out	saltwater a total of more than 6 months in the 18 month period since it was last drydocked or hauled out	saltwater continuously for 18 months	
11	1852	D	The illustrated system is used as a/an _____.	bilge water conditioner	sludge processor	oily-water conditioner	oily-water separator	GS-0113
11	1853	B	Small passenger vessels of less than 100 gross tons shall be drydocked or hauled out at intervals not to exceed 60 months if it operates _____.	6 months in fresh water and 6 months in salt water	exclusively in fresh water	in saltwater a total of 9 months in the 18 months since last drydock period	in saltwater 6 months or less within each 12 months period since drydocking	
11	1854	C	A low refrigeration compressor discharge pressure can be caused by _____.	warm food in the refrigerator	wasted zinc plates in the condenser	leaky compressor discharge valves	faulty door gaskets on the refrigerator	
11	1855	D	An offset screwdriver is best used for _____.	tightening Allen head screws only	tightening or loosening 'offset type' machine screws	driving self-tapping screws only	screws you cannot reach with a straight shaft screwdriver	
11	1856	A	If the shaft packing for a centrifugal pump requires replacement more frequently than normal, a possible cause may be _____.	worn bearings	worn mechanical seals	a flooded pump suction	wrong direction of pump rotation	
11	1857	C	The ratio of output response to a specified change in the input is known as _____.	primary feedback	deviation	sensitivity	dead band	

11	1858	D	To prevent air pockets from forming in a centrifugal pump suction line installed angled from normal, any gate valve should be installed with the _____.	bonnet above suction pipe centerline	centerline above the suction pipe centerline	stem pointing upward at right angles to the pipe	stem horizontal or pointing downward below the pipe	
11	1859	D	The bleeder plug, or docking plug located on a motor vessel double bottom tank is used to _____.	indicate when the tank is pressed up	provide a secondary means of tank sounding	vent air from the tank when bunkering	empty the tank when in drydock	
11	1860	D	The blade for a power hacksaw should be installed with the teeth _____.	pointing either toward or away from the motor end of the machine	pointing away from the motor end of the machine	pointing toward the motor if using a 4 or 6 tooth blade and away from the motor if using a 10 or 14 tooth blade	pointing toward the motor end of the machine	
11	1861	A	Which of the following statements is correct concerning welding sequences?	First, weld the joints that will tend to contract the most.	First, weld attachments which will restrain points of maximum contraction.	Make a weld across an unwelded plate joint in adjoining members.	Each successive welded part should be restrained to lock in stresses and avoid cracking.	
11	1862	D	Which of the listed types of steam end piston rod packing should be used in a steam reciprocating pump?	Reinforced rubber packing	Wire impregnated high temperature packing	Low pressure braided asbestos packing	High pressure graphite packing	
11	1863	A	When drilling holes larger than 1/2 inch, drilling a smaller hole first is a good practice. This is called a pilot hole, and the pilot drill should have a diameter _____.	slightly larger than the web thickness of the larger drill	equal to at least 1/2 the diameter of the larger drill	smaller than the dead center of chisel edge of the larger drill	small enough to ensure the maximum cut by the larger drill	
11	1864	C	A pressure drop through the refrigerant liquid line may cause _____.	solenoid valve to seize	compressor to hunt	formation of flash gas in the liquid line	expansion valve to freeze open	

11	1866	C	Heavy wear in a particular area of the inner circumference of a packing ring may be caused by _____.	a high suction head	rotating rings	badly worn bearings	a loose stuffing box gland	
11	1867	D	The steady state difference between the control point and the value of the controlled variable, corresponding with the set point, is known as _____.	dead band	control point	deviation	offset	
11	1868	D	With regards to the viscosity of lube oil in an operating system under normal load, the highest viscosity should occur _____.	just prior to entering the lube oil cooler	at the lube oil cooler outlet	at the main lube oil pump discharge	at the narrowest point of the hydrodynamic wedge	
11	1869	D	A Coast Guard issued engineer's license may be suspended or revoked for _____.	the violation of a narcotic drug law	the commission of an act of misconduct	the violation of federal water pollution law	all of the above	
11	1870	D	What type of pump is shown in the illustration?	Deep well centrifugal pump	Simplex reciprocating pump	Double screw rotary pump	Triple screw rotary pump	GS-0144
11	1871	D	Which of the factors listed governs the intensity of heat required for any given welding job?	The strength of the bond only.	The strength of the bond and the welding process being used.	The type of metal being joined only.	The type of metal being joined and the welding process being used.	
11	1872	A	Which of the listed pumps is NOT a positive displacement pump?	Centrifugal	Reciprocating	Gear	Rotary	
11	1873	C	In the illustration, the reference to 3/4"R indicates that the _____.	hole has a 3/4" depth	hole has a 3/4" diameter	hole has a 3/4" radius	notch has a 3/4" width	GS-0021
11	1874	D	If the thermal bulb of an expansion valve is incorrectly placed at the center of the coil instead of the end, it will _____.	increase the capacity of the coil	increase the superheat at the bulb	deliver more refrigerant to the coil	decrease the capacity of the coil	
11	1875	B	A grinding wheel is trued with a _____.	lathe tool	dressing tool	garnet stone	round file	
11	1876	A	When performing a hydrostatic test on a low pressure evaporator to determine the source of suspected air leaks you should use _____.	fresh water at or above the ambient temperature	circulated cold fresh water, while maintaining all normal unit operating pressures	air and a soap solution to test all joints	phosphorescent hydrazine bisodium solution visible under a black light source	

11	1877	A	The quantity or condition which is measured and controlled is known as the _____.	controlled variable	manipulated variable	set point	control point	
11	1878	A	While operating a two-stage flash-type evaporator, designed to operate in sea water of 70°F, the current seawater temperature is 50°F, while the salt water feed temperature is maintained at 170°F. The three-way solenoid valve trips, directing the distillate pump discharge to the bilge. Which of the following conditions is the probable cause for this occurrence?	Excessive and violent flashing in each stage.	Insufficient vacuum developed as a result of the sea temperature.	Excessive amount of feedwater being supplied to the first stage.	Insufficient brine density being maintained in the second stage.	
11	1879	D	What is the purpose of heat treating steel?	Develop ductility	Improve machining qualities	Relieve stresses	All of the above	
11	1880	D	The major source of chemical contaminants in hydraulic fluid is _____.	microscopic steel shavings	abrasive waste	anti-oxidant compounds	oxidation by-products	
11	1881	D	Traps in plumbing drains are designed to help prevent _____.	drain noises in the living quarters	drains clogging at the toilets	air pockets in the sewer lines	escape of odors into the living quarters	
11	1882	A	The purpose of the crescent found in the illustrated internal gear pump is to _____.	cause liquid to be trapped in between the gear spaces as the gear passes the crescent	maintain tolerances between the drive and internal gears	remove entrained air	prevent flow pulsations on the discharge side	GS-0127
11	1883	B	The amount of fluid friction or internal friction inherent in a mineral lubricating oil is reflected as a measure of its _____.	specific gravity	viscosity	S.E. number	hydrolytic stability	
11	1884	C	Thermostatic expansion valves can be adjusted for _____.	suction pressure only	head pressure only	superheat only	suction pressure and box temperature	
11	1885	A	A grease gun is generally used to lubricate a _____.	condensate pump ball bearing	generator crosshead bearing	main turbine bearing	diesel engine wrist pin bearing	

11	1886	C	An internal bypass is provided on some hydraulic system suction strainers to help reduce the possibility of _____.	aeration of the oil	contamination of the oil	pump cavitation	spongy actuator movements	
11	1887	D	The range of values through which the input can be varied without initiating an output response is known as _____.	deviation	offset	sensitivity	dead band	
11	1888	B	Coast Guard Regulations (46 CFR) require fresh water tank vents which are open to the machinery space to terminate above the deep load waterline, unless the _____.	vents are fitted with suitable mechanical closures	tanks have no boundaries in common with the hull	vents are fitted with ball float check valves or an equivalent automatic closure device	tanks are fitted with suitable pressure-vacuum relief valves	
11	1889	B	If an anchor windlass has been idle for some time, you should _____.	repack all valve stems	lubricate it prior to use	replace the foundation bolts	balance the warping heads	
11	1890	A	Water allowed to accumulate in the hydraulic system oil will cause an oxidation process producing by-products which are normally _____.	gums, acids, and varnishes	removed by cellulose type filters	neutralized by oil additives	not removed by absorbent filters	
11	1891	C	It is possible to mount a double suction centrifugal pump impeller with the vanes facing in the wrong direction. This would cause the pump _____.	head capacity to improve	discharge to be reversed	efficiency to decrease	slippage to decrease	
11	1892	C	The purpose of chill shocking an evaporator is to _____.	prepare for a hydrostatic test	stress relieve the tubes	break loose scale deposits formed on the tubes	test for leaks in the tubes	
11	1893	C	If the speed of a drill is too great, the drill will _____.	cut faster	cut slower	rapidly dull	not cut	
11	1894	B	A thermostatic expansion valve is properly controlling evaporator superheat. Adjusting this valve to lower the superheat will result in a/an _____.	evaporator pressure decrease	evaporator coil over-feed	evaporator capacity increase	expansion valve diaphragm rupture	
11	1895	B	Insulation on deck steam piping must be installed securely as _____.	loose insulation contributes to steam leaks	deck steam lines are subject to vibration	steam driven machinery cannot run with loose insulation	loose insulation prevents normal pipe expansion	

11	1897	B	The value of the controlled variable, which under any fixed set of conditions the automatic controller operates to maintain, is known as _____.	set point	control point	deviation	offset	
11	1898	D	Air compressor receivers should be 'blown down' at least _____.	yearly	quarterly	monthly	daily	
11	1899	C	A vessel's immediate protection in the event of a broken stern tube is a/an _____.	aft collision bulkhead	stern frame bulkhead	after peak bulkhead	aft machinery space watertight bulkhead	
11	1900	A	Hydraulic machinery failures are commonly caused by misalignment of the system components and by _____.	hydraulic fluid contamination	excessive fluid friction	turbulent fluid flow	fluid pressure surges	
11	1901	B	Which of the problems listed could happen if you attempted to force open a valve 'frozen' in position by using a wrench on the hand wheel?	Over compression of the packing	Bending of the valve stem	Rapid corrosion of the valve disc	Cracking of gaskets upstream of the valve	
11	1902	D	A double suction centrifugal pump impeller has been installed in the reverse direction, and will _____.	have a greater head capacity	operate with increased impeller efficiency	discharge through the suction side of the pump casing	require more power to turn the shaft	
11	1903	B	If a centrifugal pump were continually operated with the discharge valve closed, the _____.	motor controller overload would open	pump would eventually overheat	relief valve would continuously cycle open	motor would overheat	
11	1904	C	When you adjust a thermostatic expansion valve _____.	refrigerant must be bled off the sensing line before adjustments are made	all refrigerant must be pumped into the receiver before adjustments are made	time must be allowed for conditions to stabilize in the evaporator before further adjustments are made	all refrigerant must be routed through the dehydrator while changing the superheat setting	
11	1905	C	If water were a semisolid, the linear distance a propeller would advance in one revolution is the _____.	blade thickness fraction	mean width ratio	pitch	skew back factor	

11	1906	B	To ensure adequate lubrication and to prevent a high operating temperature, the recommended amount of grease injected into a ball or roller bearing is approximately _____.	10-25% of the original void space in the bearing	25-50% of the original void space in the bearing	50-75% of the original void space in the bearing	75-95% of the original void space in the bearing	
11	1907	A	When the pressure applied to a Bourdon tube-type pressure gage is reduced to atmospheric pressure, the tube will begin to 'bend' towards the center of arc. Small variations develop preventing the tube from returning to its exact original shape due to the process known as _____.	hysteresis	compression	homiostatious deformation	gas eddys	
11	1908	A	The shaft sleeves have recently been replaced on a centrifugal salt water service pump. The packing gland is now drawn tightly up against the casing. Despite the use of standard procedures to tighten the packing gland, water continues to pour out along the shaft. The probable cause for this situation is that _____.	the shaft sleeve "O" ring seals were not installed	suction head pressure has become excessive	the sealing water flow to the stuffing box is blocked	only two sections of the lantern ring were installed	
11	1909	A	Your Coast Guard engineer's license _____.	can be suspended or revoked upon satisfactory proof of negligence	must be renewed every 2 years	serves in lieu of a U. S. Passport	entitles you to be master of uninspected motor vessels under 100 tons	
11	1910	C	Hydraulic machinery failures are commonly caused by contamination of the hydraulic fluid and _____.	fluid friction	fluid turbulence	component misalignment	pressure surges	
11	1911	D	A weld with triangular cross sections is used to join two surfaces at right angles to each other, and is called a _____.	seam weld	plug weld	tack weld	fillet weld	
11	1913	B	Before drilling a hole in a piece of metal, the location of the hole center should be _____.	marked with chalk	center punched	scribed	blued	

11	1914	C	The refrigeration system low pressure cutout switch is actuated by _____.	condenser pressure	a sensing bulb at the tail coil of the evaporator	pressure changes in the suction line	failure of the king solenoid valve	
11	1915	A	The movement of steam piping, as a result of changes in temperature, is compensated for by the use of _____.	expansion joints	flexitallic gaskets	rigid brackets	union rings	
11	1916	B	Traps at plumbing drain connections prevent _____.	system clogging	escape of odors	air pockets	drain noises	
11	1917	B	Devices, such as a pressure gage, that are subject to continuous expansion and contraction are affected by hysteresis. This is a natural process that _____.	allows a material to return to its exact original shape	permits a resilient material to return to its almost original shape	allows a resiliant material to resist permanent deformation	is directly related to a material's elastic limit	
11	1918	C	In an automated control system, which of the following statements would apply to any type of closed loop system?	The manipulated variables are adjusted only from the input demand signals without monitoring the outlet conditions or variables.	Another term commonly used in conjunction with this type of system is 'feed forward.'	The controlled variable must always deviate from its set point before any corrective action is initiated by the controller.	In order for a system to fall under the category of closed loop control, there should be no adjustments required to be made manually by the operator.	
11	1919	D	A knocking sound emitted from an unloaded air compressor is probably caused by _____.	damaged intake valves	excessively tight mounting bolts	insufficient cylinder lubrication	a loose piston	
11	1920	A	Which of the following statements is true concerning low pressure distilling units?	High conductivity of the distillate indicates distillate salinity is excessive.	Increasing the absolute pressure of the shell will increase the distiller's capacity.	Mesh separators are used in evaporators to filter the distillate.	Reducing the brine density will reduce the heat lost overboard.	

11	1921	B	If the high pressure port became plugged in the spring-loaded, internal pilot, self-operated, steam pressure reducing valve illustrated, which of the following problems would probably occur?	The main valve would open wide and deliver high pressure steam.	The opening of the auxiliary valve "D" would have no effect on the positioning of the piston 'H.'	Main valve "B" would be opened by spring 'A.'	Spring "F" would open valve "D" causing spring "A" to compress.	GS-0044
11	1923	D	A piece missing from one blade of a four-bladed propeller could result in _____.	accelerated stern bearing wear	excessive shaft vibrations	unusual noises	all of the above	
11	1924	C	The sensing line for the low pressure cutout switch to a refrigeration system is located _____.	in the chill box	before the receiver	on the suction side of the compressor	on the discharge side of the compressor	
11	1925	A	A taper tap is correctly used for _____.	starting threads in a hole	producing tapered threads in a hole	deepening the extent of existing threads in a hole	finishing the threading operation in a blind hole	
11	1926	A	How many hidden lines are shown in the right side (end) view of the drawing illustrated?	None	Two	Four	Six	GS-0021
11	1927	D	Which type of screwdriver listed would have a 'Keystone' type vertical cross-sectional tip?	Torx	Phillips	Allen	Standard	
11	1928	B	In accordance with Coast Guard Regulations (46 CFR), a nonmetallic flexible hose, used in a nonvital freshwater system, operating at 125 psi must be constructed _____.	with a self-extinguishing type covering	with a fiber reinforcement	in short reasonable lengths for the purpose of flexibility only	all of the above	
11	1929	C	When the ship's bulkheads are reinforced against bending and bulging, the bulkheads are provided with _____.	stanchions	girders	stiffeners	rabbits	
11	1930	D	In the production of freshwater from seawater through a process of heating and cooling, the cooling phase of production is usually called _____.	evaporation	distillation	dehydration	condensation	
11	1931	B	Which of the listed metals can usually be drilled without lubrication?	Steel	Brass	Monel	Tungsten	

11	1932	A	If a centrifugal pump sealing line becomes restricted while operating under a negative suction head (suction lift), the inner end of the stuffing box will be _____.	under a vacuum and air will tend to leak into the pump	sealed by the fluid being pumped and no leakage will occur	under pressure and fluid will tend to leak into the pump	sealed by the seal cage or pump lantern ring	
11	1933	C	All straight shanked twist drills must be mounted or held in a _____.	drill socket	tapered sleeve	drill chuck	morse sleeve	
11	1934	A	The low pressure cutout switch used on a refrigeration system compressor is set to cut in at approximately 5 psig and cutout at _____.	0.5 psig	5 psig	15 psig	20 psig	
11	1935	C	Excessive propeller vibration may occur as a result of _____.	operating at low speed	high water pressure under the hull	cavitation	operating in deep river channels	
11	1936	D	Which of the problems listed will occur if diaphragm "E", in the illustration shown, develops a significantly large hole?	The auxiliary valve will open wider due to the action of spring 'F.'	The main valve "B" will open wider compressing the main valve spring 'A.'	Downstream pressure will be greater than the desired setting.	All of the above.	GS-0044
11	1937	D	Small passenger vessel of less than 100 gross tons shall be drydocked or hauled out at intervals not to exceed 36 months if it is operated in saltwater a total of_____.	more than 9 months in the last 18 month period	less than 9 months in each of the last 12 months	30 months in the last 36 months since drydocking or haul out	6 months or less in each 12 month period since it was last drydocked or hauled out	
11	1938	B	Information from a data-logger can be helpful in determining the long term probability of machinery failure if you _____.	evaluate only the latest logged data as this is the best indication of plant status	evaluate a series of readings to obtain operating trends	monitor off limit conditions only when announced by an audible and visual signal	secure the machine under relatively steady state conditions	
11	1939	C	A Coast Guard engineer's license can be suspended or revoked for _____.	failure to attend safety meetings	having your wages garnished	being responsible for an oil spill ashore	conviction of any misdemeanor ashore	
11	1940	C	The process of boiling seawater in order to separate it into freshwater vapor and brine is usually defined as _____.	dehydration	condensation	evaporation	dissolution	

11	1941	D	Which of the following statements is true concerning the shaft seal shown in the illustration?	The splash guard remains stationary in relation to the rotating shaft.	The face, seat, and sealing strip may be repaired or replaced in an emergency situation without drawing the shaft or drydocking.	The entire assembly is of the split-type construction.	All of the above.	GS-0135
11	1943	B	If the cutting edges of a drill are ground at different angles, the _____.	drill will not cut	hole will be oversized	hole will be undersized	drill will seize immediately	
11	1944	C	The purpose of the low pressure cutout switch is to _____.	maintain liquid refrigerant at the suction of the compressor	maintain a preset suction pressure to the compressor	start and stop the compressor at preset operating pressures	operate at minimum efficiency	
11	1945	D	Regarding the reducing valve shown in the illustration, the spring force as a result of compression from turning the hand wheel, is balanced by the _____.	small spring beneath the controlling valve	signal from an external pilot valve	steam pressure on the inlet side of the valve	reduced pressure acting on the underside of the diaphragm	GS-0054
11	1946	B	Failure of the steam pressure reducing valve to deliver proper steam pressure could be caused by _____.	frictional losses downstream of the valve	low pressure in the steam supply to the valve	reduced steam pressure acting on the underside of the valve diaphragm	high pressure steam acting upon the auxiliary valve	GS-0044
11	1947	A	Partially clogged or scored nozzles in a two stage air ejector unit of a flash distilling plant could result in a _____.	fluctuating vacuum in the flash chamber	flooded seawater feed heater shell	high water level in the air ejector after condenser	malfunctioning check valve in the air ejector discharge	
11	1948	D	In modern ship construction, high tensile steel (HTS) may be permitted in _____.	the sheer strake	the keel strake	the margin strake	all of the above	
11	1949	D	A check run on a hydraulic anchor windlass during long periods of inactivity should be carried out to _____.	prevent chemical breakdown of hydraulic fluid	remove condensation from the fluid reservoir	prevent the anchor from seizing in the hawsepipe	renew the internal coating of lubrication	

11	1952	C	If two centrifugal pumps, driven by two independent electric motors, operating at unequal speeds are discharging an inflammable liquid through a common discharge line, the higher speed pump may cause the slower pump to _____.	stop	turn backward	overheat	overspeed the driving end	
11	1953	B	The dimension of the thinnest hydrodynamic film developed within a full journal bearing, when all other factors remain constant, depends upon the _____.	pour point of the lubricant	fluidity of the lubricant	dielectric strength of the lubricant	interfacial tension of the lubricant	
11	1954	C	The purpose of the refrigeration system low pressure cutout switch is to _____.	protect the compressor from liquid flood back	protect the compressor from low discharge pressure	start and stop the compressor upon system demand	start the compressor after a drop in the evaporator pressure	
11	1955	B	Mechanical shaft seals used on water service pumps require lubrication of the seal faces to minimize deposits of foreign matter on those surfaces. Which of the following pressures and lubricants are required?	Water under negative pressure.	Water under positive pressure.	Oil under positive pressure.	Oil under negative pressure.	
11	1956	B	Which of the following conditions can develop if a valve with a badly scored valve stem is repacked?	The valve disk will crack.	Leaking and premature failure of the packing.	The valve disk will become eroded.	The valve seat will sustain damage due to fretting.	
11	1957	C	Which of the following statements best describes a 'Keystone' shaped tip on a standard screwdriver?	A straight shank that does not widen at the top of the blade.	A fourway tip cut at right angles.	A blade whose width is approximately that of the shank diameter with flattened tapered sides.	A fourway tip with 30° flukes.	
11	1958	B	Which of the following statements correctly describes the construction of the close coupled sanitary pump shown in the illustration?	The pump suction and discharge connections are made with screwed pipe fittings.	The pump and motor have a common shaft.	The pump impeller is classified as double suction.	The pump housing and motor frame provide for radial adjustment of the shaft coupling.	GS-0070

11	1959	B	In the diagram illustrated, item "4" represents a _____.	check valve	globe valve	relief valve	motor operated valve	GS-0125
11	1960	C	Overheating of a hydraulic system may be a result of _____.	changing pump discharge pressure in response to normal load variations	a high oil level	incorrect fluid viscosity	continued slow recirculation of the oil	
11	1961	C	Condensate must be drained periodically from the air compressor receivers to prevent _____.	second stage cylinder lockup	oil sump contamination	faulty operation of pneumatic valves	corrosion of air receiver baffles	
11	1962	D	When a flash-type evaporator is to be secured for an extended period of time, the entire unit should be drained, cleaned, and _____.	completely filled with saltwater	filled with descaling compound	tightly closed to exclude air	vented to the atmosphere	
11	1963	C	Rapid wear on the extreme outer corners to the cutting edges of a drill bit is the result of the drill having _____.	too much cutting speed	not enough cutting speed	too much clearance angle	not enough margin width	
11	1964	A	The oil separator (trap) used in a shipboard refrigeration system is located between the _____.	compressor discharge valve and the condenser	condenser and the receiver	receiver and the king valve	receiver and the expansion valve	
11	1965	D	Which of the following types of nuts would be best suited to use when it is important that a nut not work itself loose due to vibration?	Square nut	Wing nut	Cap nut	Castellated nut	
11	1966	D	What type of material is used to construct the rotor of the pump illustrated?	Monel	Brass sheet	Bearing bronze	Steel	GS-0144
11	1969	D	In pressure measurement, absolute pressure is defined as the difference in pressure between _____.	any two pressures measured with respect to a common reference	atmospheric pressure and barometric pressure at a given point	gage pressure and ambient atmospheric pressure	a perfect vacuum and the total pressure at a given point	
11	1970	D	According to Coast Guard Regulations (46 CFR), a fresh water evaporator is classified as a/an _____.	auxiliary boiler	fired pressure vessel	auxiliary condenser	unfired pressure vessel	

11	1971	D	The nameplate of a reciprocating pump lists the following dimensions: "7 X 6 X 4". The diameter of the liquid cylinder is _____.	4 inches	7 inches	6 X 4 inches	6 inches	
11	1972	C	Which of the following nondestructive testing methods can be used to detect a suspected subsurface defect in a tail shaft liner?	Dye penetrant	Magnetic particle	Ultrasonic	All of the above	
11	1973	B	The neutralization number obtained from a test sample of lubricating oil will tell you precisely _____.	the amount of mineral and metallic solids that will not burn	the number of milligrams of potassium hydroxide used to neutralize a measured sample	what type of acid contaminants are present in a measured sample	how much sulfuric acid the oil has absorbed during operations	
11	1974	C	An oil separator is a device used to remove oil from the _____.	liquid refrigerant	receiver	gaseous refrigerant	expansion valve	
11	1975	C	A decision has been made to change out 1,000 gallons of lube oil in a vessel's main propulsion unit. Which of the following statements is true regarding this decision?	The neutralization number has decreased below minimum levels.	The sole use of the increase in the neutralization number need only be the basis for this decision.	In addition to the increase in the neutralization number, the viscosity of oil has also increased.	A small rise in the neutralization number over several years of use has prompted this decision.	
11	1976	D	In an automation system, the effect of a control action sensed by a controller is known as _____.	command input	set point signal	output	feedback	
11	1977	C	Purging air from a hydraulic system is necessary when _____.	adding small amounts of oil to the system	the system has been overheated	the system has been drained and then filled with new oil	the system has been idle for a long period of time	
11	1978	A	Which of the following components would be necessary for the proper operation of a potable hot water system?	Circulating pump	Drift pockets	Sterilizer	Hydro-pneumatic expansion tank	

11	1980	A	Which of the following statements concerning deep well cargo pumps is correct?	A pumproom is not necessary.	The impeller is located at the upper end of the shaft.	Special priming provisions are necessary.	The prime mover is connected at the lower portion of the shaft.	
11	1981	A	Joiner bulkheads on a MODU provide _____.	compartmentation	watertight integrity	structural support	tank boundaries	
11	1983	D	When adding packing to a seal involving motion, you must be careful to prevent _____.	excessive friction in the joint	wear of the moving part	deterioration of the packing due to excessive tightening	all of the above	
11	1984	C	Oil separators installed in refrigeration systems serve to _____.	remove excess oil from the system	remove oil entrained in high pressure liquid lines	return oil entrained in refrigerant vapor back to the compressor crankcase	all of the above	
11	1985	B	The brine density in a submerged tube evaporator should be maintained at _____.	1.0 pounds of salt per 32 pounds of water	1.5 pounds of salt per 32 pounds of water	2.0 pounds of salt per 32 pounds of water	3.5 pounds of salt per 32 pounds of water	
11	1986	C	When the port power unit is started, as shown in the illustration, the unloading valve "C" _____.	remains centered to allow the servo pump discharge to build pilot pressure to shift the port unit distributor valve	shifts to direct port replenishing flow to the service tank	shifts, blocking the replenishing pump flow to the service tank, thus building the required pilot pressure to shift the distributor valve "A"	shifts to block the servo pump discharge from the starboard unit when started, thus building pilot pressure to shift the starboard unit distributor valve	GS-0123
11	1987	D	A screwdriver should never be used as a _____.	pry bar	chisel	punch	all of the above	
11	1988	A	The converter pneumatic control bypass valve, shown in the illustration, receives it low pressure signal from the _____.	hot water return manifold	converter	hot water circulating pump discharge line	hot water supply line	GS-0151

11	1989	D	Which of the following conditions will prevent a shipboard pump from achieving its maximum suction lift?	Leaks developed in the suction piping.	Friction losses as a result of improperly sized pipe.	Gases or vapors released in the liquid as a result of greater than normal pressure drops.	All of the above.	
11	1991	B	Structural bulkheads on a MODU are usually _____.	continuous	watertight	transverse	nonwatertight	
11	1992	C	Plug valves installed in hydraulic systems are most suitable for use as _____.	main supply line throttle valves	variable flow control valves	two position flow control valves	check and choke valves	
11	1993	D	In a disk-type lubricating oil purifier, _____.	the purifier driving gears are lubricated by the reclaimed oil as it leaves the bowl	all dirt and sludge are automatically discharged with the cooling water	sealing water must never be supplied until after oil is fed to the unit	deterioration of the bowl ring gasket will cause the purifier to lose its water seal	
11	1994	A	Properties of a good refrigeration oil include _____.	low wax content	high pour point	high viscosity	all of the above	
11	1995	B	Pushing the file endways (or with the axis), under pressure, against the work, is called _____.	stroke filing	cross filing	draw filing	standard form filing	
11	1996	C	Medium temperature hot water systems have been used in place of small auxiliary boilers producing 100 psig steam with _____.	280 F water systems	300 F water systems	320 F water systems	340 F water systems	
11	1997	C	The lignum vitae in a stern tube bearing is normally lubricated with _____.	grease	oil	water	tallow	
11	1998	B	The distributor valves, labeled "A" in the illustration, provide several of the following functions, with the EXCEPTION of _____.	a means for recirculating oil flow from the main variable stroke pump	aligning the servo pump "I" discharge for replenishing oil lost from the main system	aligning the main variable stroke pump discharge/return with the main rams	placing a hydraulic lock on the rams if there is a failure of the hydraulic power unit	GS-0123

11	1999	B	Which of the following guidelines is considered to reflect good design practices for shipboard steam heating systems?	Provide orifice-type bypasses for all traps and automatic valves.	Provide a dirt pocket and strainer ahead of the steam trap on a unit heater return.	Provide all units with a dirt trap and gate valve in the supply and a check valve on the return.	Wherever possible install vertical runs for condensate piping.	
11	2000	C	To anneal a copper gasket, you should heat the gasket _____.	and quench it in oil	and let cool slowly in the air	cherry red and quench in water	and carbonize it	
11	2001	C	Reinforcing frames attached to a bulkhead on a MODU are called _____.	side longitudinals	intercostals	stiffeners	brackets	
11	2002	B	Hydraulically, servo-operated, automatic, change over valves, utilized in a two ram hydraulic steering gear, serve to _____.	allow an alternate main pump to start in the fully loaded condition thus developing immediate full torque	prevent either main pump from being hydraulically motored when idle by cross pressure flow	prevent both units from operating simultaneously which could result in doubling the flow of oil and pressure leading to over pressurization of the system	all of the above	
11	2003	B	Ball peen hammers are sized according to their _____.	overall length	head weight	face diameter	peen head size	
11	2004	B	If a stateroom has a 6" by 12" opening through which air travels at 100 feet per minute, what is the volume of air being supplied to the stateroom?	36 cu ft/min	50 cu ft/min	72 cu ft/min	100 cu ft/min	
11	2005	C	Liquid is kept from leaking out at the shaft ends of a helical gear pump by _____.	overlapping spaces between gear teeth	a roller bearing	a stuffing box	the use of shaft end caps	
11	2006	B	The stern tube flushing connection can be used to _____,	assist in flushing out all packing strips when renewing packing underway	provide a positive flow of water through the stern tube for lubricating, cooling, and flushing when required	flush out brackish water resulting from extended in port operation	serve as the only source of supply of water for the stern tube bearing	

11	2007	A	The variable displacement pump stroke angle control, shown in the illustration _____.	uses a cam to initiate a linear shift of the control linkage to adjust the position of the servo control valve	is a direct mechanical control to the main pump tilting box from the planetary gear unit	has its displacement changed by cam and shaft directly rotating or rolling the tilting box to the required angle	uses the indicated horse power-torque limiter to control tilting box angle displacement	GS-0123
11	2008	D	A Bourdon tube-type steam pressure gage is fitted with a siphon loop to prevent damage from the direct effects of _____.	pressure shock	uneven expansion	entering condensate	entering steam	
11	2009	D	The size of the discharge ring used for the efficient operation of a disk type purifier is dependent upon the _____.	rated capacity of that purifier	viscosity of the oil being purified	maximum design speed of that purifier	specific gravity of the oil being purified	
11	2010	D	A vessel is in compliance with federal regulations regarding the discharge of sewage by _____.	holding all sewage onboard	treating sewage in an approved system	pumping the sewage ashore to an approved container	all of the above	
11	2011	C	In MODU construction, beams are transverse girders which provide support to _____.	bulkheads	deckhouse structures	decks	vertical frames	
11	2012	B	In the illustration, component "C" is used to replace _____.	the rudder position follow up gear	the necessity for manual repositioning of the six-way valve	the hydraulic telemotor receiver	the mechanical method for positioning of the variable stroke control of the main pump	GS-0123
11	2014	A	If a stateroom has a 5 inch by 12 inch opening through which the air travels at 100 feet per minute, what is the volume of air being supplied to the stateroom?	41.6 cu. ft/min	51.6 cu. ft/min	61.6 cu. ft/min	81.6 cu. ft/min	

11	2015	C	Which of the following statements is true regarding mechanical seals?	They may be used in lieu of conventional packing glands for any service other than saltwater.	They are not suitable for use on fuel oil transfer pumps.	They are normally lubricated and cooled by the fluid being pumped.	Once placed into service, leakage between the dynamic seal surfaces may be reduced by monthly adjustment of the spring compression.	
11	2016	A	The number "8" in the notation of an '8-32' tap, indicates the _____.	thread diameter	size of the hole	tap drill size	clearance drill size	
11	2017	C	File lengths are determined by the _____.	overall length of the file	distance between the face and the edge of the file	distance between the point and the heel of the file	length of the tang only	
11	2018	D	The follow-up mechanism for the steering gear shown functions to assure the correct rudder position for each corresponding position of the helm. When operating properly, the follow-up mechanism should _____.	rapidly return the main pump variable stroke device to neutral stroke just as the rudder achieves command angle	maintain main pump variable stroke angle after command rudder angle has been achieved	be gradually increasing main pump variable stroke device as rudder attains command angle	be returning the main pump variable stroke device gradually to neutral stroke just as rudder is achieving command angle	GS-0123
11	2019	B	Which of the following is the most common type of valving element used in hydraulic system directional control valves?	Nutating disk	Sliding spool	Elongated ball or cone	Restricted orifice poppet	
11	2020	A	Coast Guard Regulations for marine sanitation devices are contained in _____.	33 CFR Section 159	33 CFR Section 153	33 CFR Section 155	33 CFR Section 156	
11	2021	B	In MODU construction, beam brackets are triangular plates joining the deck beam to a _____.	bulkhead	frame	stanchion	deck longitudinal	
11	2022	C	The cylinders and intercoolers of most low pressure air compressors are cooled by _____.	water	oil	air	CO2	

11	2023	A	A tap marked '1/4-20' will cut a thread _____.	1/4 inch in diameter with a pitch of 20 threads per inch	1/2 inch long having a total of 20 threads	a total of 20 threads with a pitch of 1/4 inch	1/20 of an inch long and 1/4 inch in diameter	
11	2024	C	A one ton air conditioning system has which of the listed operating characteristics?	It forces 2,000 lbs. of refrigerant through the evaporator per day.	It forces 2,000 lbs. of air per hour across the evaporator coils.	Its cooling power equals that of melting 2,000 lbs. of ice per day.	It contains 2,000 lbs. of refrigerant.	
11	2025	C	Which of the materials listed is used as the dynamic seal material on mechanical seals installed on most centrifugal pumps used in water service?	Copper.	Copper and carbon.	Carbon.	Bronze.	
11	2026	D	Which of the following problems will occur if a disk-type centrifugal lube oil purifier contains insufficient sealing water prior to admitting oil flow to the bowl?	Contamination of the lube oil by emulsification will result.	The lube oil will not be subjected to the proper centrifugal force.	The lube oil will overheat and flash.	Oil will discharge from the heavy phase discharge port to the sludge tank.	
11	2028	C	As long as component "M", shown in the illustration, is rotating _____.	component 'F4' will be rotating	the output of shaft "K" will be utilized continuously	the main pump will be on stroke	the main pump will be on neutral stroke	GS-0123
11	2029	A	Feed water supplied to a flash type distilling plant will flash to vapor in the first-stage due to _____.	flash chamber pressure pressure being lower than the saturation pressure corresponding to the feedwater temperature	temperature being higher than the evaporation temperature of the supplied feedwater	heat exchange surfaces being directly in the path of the entering feedwater	orifices finely atomizing the heated feedwater entering the flash chamber	
11	2031	C	Stanchions prevent the entire deck load on a MODU from being carried by the _____.	bulkheads	stringers	frames and beam brackets	deck longitudinals	
11	2032	C	The Phillips screwdriver has a blunt end and flukes with an angle of _____.	10°	45°	30°	60°	
11	2033	D	When using a handheld hacksaw, you should apply pressure only on the forward stroke _____.	only when cutting thin wall tubing	only when cutting carbon steel	only when cutting conduit	at all times	

11	2034	D	An important consideration in selecting a lubricating oil for use in a refrigeration compressor is for the oil to _____.	have a high viscosity index	mix readily with refrigerant	have a high freezing point	have a low pour point	
11	2035	D	If the intercooler relief valve lifts while an air compressor is operating under load, you should check for _____.	a defective pressure switch or pilot valve	a leak in the intercooler piping	leakage through the low pressure unloader control diaphragm	leaking high pressure discharge valves	
11	2036	B	The output from shaft "K", shown in the illustration, becomes an actual control factor when component(s) _____.	'F4' is rotating	'F4' is hydraulically locked	'F2' and 'F3' are energized	'F1' and 'F2' are energized	GS-0123
11	2037	D	Assuming valve "A" is correctly aligned in the no-flow position as shown with the system in operation, which of the following statements is true?	The fixed delivery pump would be stopped automatically by a pressure switch.	Valve "B" would be open before valve "D".	Valve "C" would be closed.	Valve "D" would normally open before valve "B".	GS-0049
11	2038	C	Which of the following statements represents the main difference between a stuffing box gland and a mechanical seal for sealing the shaft of a centrifugal pump?	Packed stuffing box glands are subject to wear, but mechanical seals are not.	Packed stuffing box glands must be cooled by the liquid being pumped, but mechanical seals do not require cooling.	If packing fails, the pump can be kept running temporarily by tightening the gland, but if a mechanical seal fails it must be totally renewed to stop the leakage.	The sealing surface of a mechanical seal is parallel to the shaft, but the sealing surface of a packed gland is perpendicular to the shaft.	
11	2040	D	In a shell-and-tube type hydraulic fluid cooler, the amount of heat transferred from the hydraulic fluid to the cooling water depends upon _____.	the temperature of the hydraulic fluid	the flow rate of both the cooling water and the hydraulic fluid	the temperature of the cooling water	all of the above	
11	2041	C	Support of MODU side plating is provided primarily by transverse _____.	beams	girders	frames	bulkheads	

11	2042	C	With regards to the American National Screw Thread nomenclature, 'pitch' is the _____.	angle formed by adjacent flanks of a thread	number of threads divided by the length of the threaded portion of the screw	distance between corresponding points on adjacent threads	angle of taper formed by the centerline of the screw and the crests of the thread	
11	2043	D	The presence of scale and dirt on the saltwater side of a lube oil cooler is usually indicated by _____.	clogged lube oil strainers	seawater leaking into the lube oil system	decreasing lube oil pressure	gradually increasing lube oil temperature	
11	2044	C	One refrigeration ton is equal to _____.	180 BTU/hr	2,000 BTU/hr	12,000 BTU/hr	2,880,000 BTU/day	
11	2045	B	A leaking suction valve in the second stage of a two stage, high pressure, air compressor can cause excessively high _____.	second stage discharge pressure	first stage discharge pressure	pressure in the aftercooler	compressor final discharge temperature	
11	2046	A	When the steering gear receives a command signal for a 15° right rudder, during the initial period of movement of the rudder _____.	shaft "K" will rotate, but its output to "M" will be nullified	shaft "K" will rotate causing "M" to rotate reducing linkage length	shaft "L" will cause shaft "K" to rotate via the planetary differential gear	shaft "L" will rotate, but its output to "M" will be nullified	GS-0123
11	2047	B	The tool used to remove a ball bearing from the shaft of a motor is called a _____.	slugging wrench	gear puller	drift pin	come along	
11	2048	A	Fabric type packing, such as flax or hemp, is best suited for _____.	low temperature use	high temperature use	use where alignment is critical	superheated steam applications	
11	2049	C	The port labeled "J", shown in the illustration, serves to _____.	vent accumulated air that would interfere with the operation of the controller	provide oil flow under pressure from the compressor lube oil pump to activate the cylinder unloading mechanisms to load up the necessary cylinders	bleed off pressurized oil from the cylinder unloading mechanism to allow the cylinders to unload	sense crankcase suction pressure as the required feedback for proper operation of the unloader control device	RA-0013

11	2050	B	Which of the listed problems is occurring if a coil type high pressure evaporator constantly requires an increase in the coil steam pressure in order to maintain capacity?	The brine density is improper.	Heat transfer surfaces are being layered with scale.	Impure distillate is being produced.	Shell vapor pressure is constantly decreasing.	
11	2051	A	Lighter longitudinal stiffening frames on the MODU side plating are called _____.	stringers	side frames	side stiffeners	intercostals	
11	2052	B	The follow-up gear on an electro-hydraulic steering gear _____.	relieves excessive fluid pressure.	takes the pump off stroke when the desired rudder angle is attained.	allows for rudder movement faster than the movement of the ship's wheel.	returns the rudder to amidships when the wheel is released.	
11	2053	D	Which of the following statements is true concerning a radiator type heat exchanger?	Raw water is the cooling medium.	Water cooled exhaust elbows remove the heat.	The surge tank must be located a minimum of 4 feet above the highest finned tube.	Air flow provided by a fan is used as the cooling medium.	
11	2054	A	How much heat can a 5 ton refrigeration unit remove from a refrigerated space?	60,000 BTU/hr	80,000 BTU/hr	100,000 BTU/hr	120,000 BTU/hr	
11	2055	B	Leaking valves in an air compressor can be a result of _____.	excessive discharge pressure	abrasion, dust, and dirt	excessive compressor speed	irregular compression strokes	
11	2056	D	In order to change over the main pumps shown in the illustrated steering gear, which of the components listed must be manually actuated?	"A"	"C"	Six-way valve	Motor controller on-off switches	GS-0123
11	2057	D	When renewing spiral packing in a centrifugal pump stuffing box, after the packing is firmly seated, the packing gland nuts should be _____.	left in that position	loosened until the gland clears the stuffing box	tightened an additional 10% to compress the packing	loosened, and then retightened until they are only finger tight	
11	2059	A	Aftercoolers are used with air compressors to _____.	reduce the temperature of compressed air	decrease the density of compressed air	dampen pressure pulses in the discharge air	ensure complete expansion of the compressed air	

11	2060	B	In the last effect of a multi-effect submerged tube distilling plant rapid fluctuations of the absolute pressure tend to cause _____.	scale formation with increased heat transfer	priming with increased salinity of distillate	slight foaming at the distillate feed pump	improved operating conditions at the brine pump	
11	2061	C	The heavier outboard strake of deck plating on a MODU is called the deck _____.	stiffener	beam	stringer	doubler	
11	2062	B	In which of the following types of evaporators is the control of brine density least important?	Solo shell evaporators	Flash evaporators	Submerged tube evaporators	Basket evaporators	
11	2063	D	Heat exchanger tubes can be protected against erosion and abrasion by the use of _____.	metallic packing on the inlet end	fiber bushings in the ferrules	zinc pencils on the waterside	plastic tube end protectors	
11	2064	C	What is the equivalent tonnage of a refrigeration system rated at 48,000 BTU per hour?	2.5	3	4	5	
11	2065	D	Leaking valves in a low pressure, reciprocating, air compressor can result from _____.	excessive compressor discharge pressure	operating the compressor at excessive speed	uneven piston stroke in the compressor	abrasion by dust and dirt	
11	2066	C	The impeller shown in the illustration is an example of a/an _____.	axial piston impeller	positive displacement impeller	centrifugal impeller	high pressure impeller	GS-0130
11	2067	C	Rudder motion is prevented from exceeding the movement of the steering wheel by the _____.	return springs	six-way valve	follow-up gear	differential gear	
11	2068	C	An air compressor is equipped with an intercooler and an aftercooler to _____.	inject water vapor into the compressed air	prevent overheating of first stage valves	increase compressor efficiency and economy	reduce the compressed air charge density	
11	2069	A	Return lines in a non-pressurized hydraulic system reservoir should enter the tank well below the fluid surface level to _____.	prevent foaming	prevent moisture accumulation	prevent vacuum formation	accommodate thermal expansion	
11	2070	A	Evaporator priming can be caused by high water level, fluctuating steam pressure, or _____.	fluctuating shell vacuum	low brine density	low feed temperature	a brine overflow weir set too low	
11	2071	B	Where is thicker plating usually found in the construction of integral tanks on a MODU?	On the outside of the tank.	At the bottom of the tank.	At the top of the tank.	At the center of the tank.	

11	2072	C	If it were possible to simultaneously operate both main pumps shown in the steering gear illustration, which of the following statements would be true if the starboard power unit were to be brought on line with the port unit already in operation?	The indicated valve spool in "C" would shift to the left	Pump "I" would supply replenishing oil to the system	The starboard distributor valve "A" would allow recirculation of the starboard main pump	Pump "G" would supply servo control oil flow to control the main pump stroke control mechanism	GS-0123
11	2073	B	When renewing the shaft packing on a centrifugal pump equipped with an external liquid sealing supply, you should _____.	always turn down the shaft in a lathe to ensure a snug fit	ensure that the lantern ring is aligned with the sealing supply opening	check the stuffing box for irregularities with a dial indicator	make sure the seal cage is always positioned at the base of the stuffing box	
11	2074	B	If an air conditioning system were rated at 24,000 BTU, the equivalent tonnage of the unit would be _____.	1 ton	2 tons	3 tons	4 tons	
11	2076	B	In order to adjust the temperature set point of the temperature regulating valve illustrated, you should adjust the device indicated by the letter _____.	A	B	C	D	GS-0045
11	2077	A	If a ship service air compressor operating in intermittent service were failing to unload, the _____.	compressor would stop abruptly when power was secured	compressor would run continuously	air receiver indicated pressure would be excessively low	compressor would require more than the normal amount of lubrication	
11	2078	B	On an electro-hydraulic steering gear, which of the listed devices will keep the rudder from over traveling the bridge signal?	Rudder angle indicator	Follow-up gear	Electric transmitter	Rudder angle limit switch	
11	2079	D	A multistage flash evaporator will be unable to produce consistently pure distillate if the _____.	distillate cooler is dirty	tubes of the saltwater feed heater are flooded internally	distillate meter stops	vacuum is fluctuating	
11	2080	D	The Reed and Prince screwdriver has a sharp pointed end with flukes that have an angle of _____.	10°	30°	60°	45°	

11	2081	D	When securing a centrifugal type distillate pump, which of the listed steps should be carried out first?	Close the pressure gage isolation valves.	Secure the casing vapor vent line.	Secure the stuffing box sealing water line.	Trip the three way dump valve.	
11	2082	D	Regarding the pump shown in the illustration, the quantity and direction of fluid flow is controlled by _____.	varying the direction of rotation and size of the pintle valve	varying the direction of rotation of the prime mover and throttling the pump output	moving the cylinder block off center from the reaction ring	moving the reaction ring off center from the cylinder block	GS-0059
11	2083	C	On tankers with manually operated tank valves, the type of valve most commonly used is the _____.	butterfly valve	globe valve	gate valve	check valve	
11	2084	D	If a refrigeration box develops a heat load of 60,000 BTU/hour, what size refrigeration unit would be required?	3 ton	4 ton	4.5 ton	5 ton	
11	2085	D	In heat exchangers, seawater pressure should be maintained lower than freshwater pressure to _____.	eliminate scaling problems on the saltwater side	reduce erosion of heat exchanger surfaces	ease the load on the saltwater service pump	prevent contamination should leaks develop	
11	2086	C	Which of the following is the probable cause for a motor driven, low pressure, reciprocating air compressor to repeatedly trip the circuit breaker upon starting?	Defective pressure switch	Leaking suction unloader	Compressor starting against full load	Compressor starting without any load	
11	2087	C	Most hydraulic steering gears are fitted with relief valves which _____.	function when the rudder is amidships	relieve excess whip pressure from the hydraulic oil system	protect the piping assembly from external rudder shock	relieve excessive telemotor pressure	
11	2088	C	Steam supply piping to deck machinery is insulated in order to _____.	maintain good turbulent free steam flow through the pipe	prevent superheating of the steam	reduce heat loss from the system	contain small steam leaks	

11	2089	B	A piece of tapered round stock 36 inches long, 4 inches in diameter at the large end and 2 1/2 inches in diameter at the small end. What tailstock set over was used to machine the taper?	0.375 inch	0.750 inch	1.500 inch	2.500 inch	
11	2090	B	What is the maximum steam pressure allowed by Coast Guard Regulations (46 CFR) to be provided in the steam heating system of the living spaces?	30 psig	45 psig	60 psig	75 psig	
11	2092	A	When a heat exchanger is used as a cooler, excessive cooling water flow should be avoided to prevent _____.	erosive tube failure	waterside deposit buildup	tube sheet bowing	water hammer damage	
11	2093	B	After the installation of new impeller wearing rings by pressing them onto the pump impeller hub, it is advisable to _____.	dynamically balance the shaft and impeller	check the shaft and impeller assembly on centers to see if the ring surfaces are true	visually inspect the rings after about an hour of service	all of the above	
11	2094	B	If a refrigeration system extracted 48,000 BTU per hour, the equivalent tonnage of the unit would be _____.	2 tons	4 tons	6 tons	8 tons	
11	2096	C	If a ship service air compressor failed to unload the _____.	compressor would run continuously	air receiver pressure would be excessively low	belts could slip when starting	compressor would pump lube oil	
11	2098	D	In an electro-hydraulic steering system, rudder shock is limited by _____.	a differential gear	return springs	a hydraulic accumulator	relief valves	
11	2099	D	Which of the following statements is true regarding a positive displacement rotary pump?	Theoretically, there is no limit to shut off head pressure.	Theoretically it is self priming.	The discharge side should be protected against excessive pressure build up via a relief valve.	All of the above.	

11	2101	D	Rapid fluctuation of the last effect shell vacuum in a submerged tube evaporator can cause _____.	erratic air ejector operation	air leaks in the tube nest	rapid scaling in all effects	priming in that effect	
11	2102	A	In a heat exchanger, excessive fluid velocity should be avoided to prevent _____.	erosive tube failure	waterside deposit buildup	tube sheet bowing	water hammer damage	
11	2103	C	Compensated flow control, or constant flow valves are used in hydraulic systems to _____.	compensate for major leaks in the system	maintain the original fluid viscosity	allow for changes in pressure and temperature within the system	assure constant fluid temperature	
11	2104	D	An air conditioning system, required to remove from 33,000 to 35,000 BTU per hour, should have a minimum capacity of _____.	1.5 tons	2.0 tons	2.5 tons	3.0 tons	
11	2105	A	Carryover in a flash type distilling plant can be a result of _____.	faulty operation of the brine overboard pump	a pressure drop through the loop seal	high distillate conductivity	low distillate conductivity	
11	2106	C	If a ship service air compressor failed to unload, the _____.	compressor would dangerously overspeed	air receiver pressure would be excessively low	circuit breaker may open on starting	compressor would pump lube oil	
11	2107	C	If the controlled system temperature downstream of the valve shown in the illustration, decreases below the set point, which of the listed actions will occur?	Stem "C" moves down.	Power piston "H" moves up.	Spring "F" is compressed.	Valve "D" closes.	GS-0045
11	2108	A	If a centrifugal pump develops insufficient discharge pressure as a result of worn wearing rings, which of the following corrective actions is required?	Replace the rings.	Throttle in on the discharge valve.	Always replace the wearing rings and the impeller as a set.	Throttle in on the suction valve.	
11	2109	A	Accidental flooding of the engine room bilges through the bilge system is prevented by _____.	stop-check valves installed in the bilge suction manifolds	using a positive displacement reciprocating bilge pump	installing eductors in all bilge rose boxes	installing a swing check before each bilge valve	

11	2110	B	When the compressed air reservoir is placed in line with an air compressor and is used as an aftercooler, the reservoir must be _____.	fitted with a manhole	frequently drained of condensed water	fitted with a moisture trap at the inlet	fitted with a sight glass	
11	2111	D	Priming in a submerged tube evaporator can be caused by high water level and _____.	low brine density	low steam temperature	high absolute pressure	excessive brine density	
11	2112	B	In an electro-hydraulic steering system, damage due to rudder shock is prevented by _____.	buffer springs	relief valves	oil flowing through the pumps	dashpots	
11	2113	C	A device incorporating a variable orifice placed in series with a check valve in a hydraulic system, is used to _____.	allow free movement of hydraulic fluid in both directions	allow fluid flow in one direction only	allow throttled fluid flow in one direction only	restrict hydraulic fluid flow in both directions	
11	2114	A	The receiver used in a refrigeration system _____.	stores liquid refrigerant	collects noncondensable gases	allows refrigerant subcooling	prevents compressor surging	
11	2115	B	Zinc anodes are installed in a marine raw water cooling system to _____.	inhibit oxidation	control electrolysis	prevent scaling	eliminate corrosion	
11	2116	A	Major repairs or alterations affecting the safety of small passenger vessels of less than 100 gross tons shall _____.	not be made without the knowledge and approval of the OCMI	be permissable without the knowledge and approval of the Officer in Charge of Marine Inspection	be made at anytime convenient to the vessel operator without prior approval	be made only when Coast Guard Administrative Form 2892 is submitted	
11	2117	B	In a double-effect submerged tube evaporator, the brine density should be prevented from falling below 1.5/32nds to minimize _____.	scale formation on the tube nests	loss in capacity and economy	corrosion in the evaporator	carryover in the evaporator	
11	2118	B	With regards to the valve shown in the illustration, changes in the rate of condensation downstream of the device are first sensed by the _____.	thermal element "M"	diaphragm "J"	diaphragm "A"	pilot valve "D"	GS-0045
11	2119	A	If there is a sudden drop in the capacity of a reciprocating air compressor, you should check for _____.	broken compressor valves	worn piston rings or cylinder liners	excessive compressor speed	a defective pressure switch or pilot valve	

11	2120	C	Which of the equipment listed is most effective in processing bilge slops for overboard discharge?	A 100 PPM oily water separator.	Assembling the lube oil purifier as a separator and aligning it to the bilge overboard.	A 15 PPM oily water separator.	A magnetic duplex strainer.	
11	2121	C	The illustrated system is used to _____.	process sludge found on motor vessels	process sludge found on steam vessels	process oily-water mixtures present in the bilge water	condition reduction gear lube oil by removing the water	GS-0113
11	2122	D	When a reciprocating pump is operating at maximum speed, the cushioning valves should be _____.	wide opened	half opened	3/4 opened	almost completely closed	
11	2123	A	Rudder position is shown on the bridge by the _____.	rudder angle indicator	follow-up gear	telemotor position	Rapson slide indicator	
11	2124	C	Which lettered component, shown in the illustration, indicates the location of the receiver?	L	H	the device between line 14 and line 15	K	RA-0012
11	2125	C	The purpose of a restrictor valve, as it is used in a hydraulic hatch cover system, is to _____.	prevent oil backflow to the actuators	prevent the hydraulic pump from overheating	control the speed of the hatch cover movement while closing	restrict the oil supply to the hatch covers not in use	
11	2126	D	During the inspection for certification of small passenger vessel of less than 100 gross tons, a hydrostatic test of 1-1/4 times the maximum allowable working pressure shall be made to _____.	tubular heat exchangers	hydraulic accumulators	refrigeration service heat exchangers	oil fired boilers	
11	2127	B	The root opening dimension shown in the illustration is used to indicate the _____.	penetration depth of the desired weld	distance across the bottom of the "V" groove	width across the bottom of the weldment	maximum thickness of the completed weld	GS-0076
11	2128	D	In the spring-loaded, steam pressure, reducing valve shown in the illustration, if the downstream pressure falls below a preset value _____.	spring "A" will be compressed	valve "D" will open	diaphragm "E" will deflect downward	all of the above	GS-0044
11	2129	D	If the capacity of a reciprocating air compressor gradually drops off, the cause could be _____.	leaking compressor valves	a clogged air filter	worn cylinder liners	all of the above	

11	2130	D	Which of the following statements correctly describes the operation of the pump shown in the illustration?	The pump stuffing box is externally supplied for sealing.	The pump suction is through the vertical flange illustrated on the left.	The pump shaft is fitted with tapered needle bearings	The pump stuffing box is provided with an internal sealing line.	GS-0070
11	2131	B	Improper waterside venting of the tube nests in a submerged tube evaporator will cause a/an _____.	fluctuating vacuum in the evaporator	loss of evaporator capacity	increased vacuum in the first effect	increased brine overboard flow rate	
11	2132	C	The static suction head of a horizontal centrifugal pump, is the difference in elevation between the _____.	discharge liquid level and the suction liquid level	discharge liquid level and the pump centerline	suction liquid level and the pump centerline	suction submergence level and the pump discharge	
11	2133	D	A drilled hole is accurately finished to size with a _____.	center drill	finish drill	broach	reamer	
11	2134	C	In a refrigeration plant, one purpose of the receiver is to _____.	cool the refrigerant gas	superheat the refrigerant liquid	store the refrigerant	condense the refrigerant	
11	2135	A	In the radial piston pump shown in the illustration, oil will enter the cylinder as the piston travels from position _____.	1 to position 2	2 to position 3	3 to position 4	4 to position 1	GS-0060
11	2136	B	Emergency lighting on small passenger vessels of less than 100 gross tons for lounge areas below the main deck shall be _____.	illuminated at all times while vessel is underway	illuminated automatically and actuated upon failure of the main lighting system	portable battery operated and have sufficient capacity for 8 hours of continuous operations	both "A" and "C"	
11	2137	C	In the spring-loaded pressure reducing valve illustrated, the auxiliary valve "D" is closed by _____.	diaphragm "E"	mechanical linkage	a spring	high pressure steam	GS-0044
11	2138	D	When air compressors are arranged for automatic operation, the cylinders can be unloaded during starting and stopping by _____.	bypassing the discharge to suction	fitting depressors which hold the suction valve plates on their seats	step unloading the cylinders in a multi-cylinder machine	all of the above	

11	2139	C	If a higher than normal water level is observed through the inspection port of a flash evaporator, you should suspect _____.	a leak in the feedwater heater	improper vacuum	a malfunctioning brine pump	a clogged desuperheater water strainer	
11	2140	A	The motor operated valve, shown in the illustration, is represented by item number _____.	1	2	3	4	GS-0125
11	2141	C	A Reed and Prince screwdriver should be used only on a Reed and Prince screw, and a Phillips screwdriver should only be used on a Phillips screws in order to avoid damaging the _____.I. tool II. Screwhead	I only	II only	both I and II	neither I or II	
11	2142	D	Reciprocating air compressor bearing failure may result from _____.	a misaligned crankshaft	overtightened drive belts	contaminated sump oil	all of the above	
11	2143	D	In a fixed displacement axial piston hydraulic motor, the speed is varied by _____.	regulating the ratio between torque and speed via the torque limiter at the motor	directing the motor output flow through a bypass line	maintaining a constant flow and pressure input	controlling the input flow rate	
11	2144	C	When checking zinc plates, or pencils in the refrigerating system condenser, you should _____.	paint and insulate the plates to prevent corrosion	renew the plates at each inspection	replace the zincs if deteriorated by 50%	file the plates to change the negative value	
11	2145	D	For drilling or machining cast iron, which of the cutting lubricants is it necessary to use?	Lard oil	Soluble oil	Kerosene	None of the above	
11	2146	B	One of the main differences between a propeller pump and a centrifugal pump is the absence of a _____.	volute in the centrifugal type pump	volute in the propeller type pump	velocity nozzle in the centrifugal type pump	reciprocating piston in the centrifugal type pump	
11	2147	B	In a flash evaporator, scale as a result of higher than normal temperatures is most likely to occur in the _____.	second stage feed heater	saltwater feed heater	distillate cooler	second stage vapor separator	

11	2148	B	The purpose of the vertical 'grooves' machined on the main valve "G", in the spring loaded temperature regulating valve shown in the illustration, is to _____.	provide downstream turbulence	provide for quieter valve operation	compensate for upstream pressure surges	increase sensitivity	GS-0045
11	2149	C	Which of the listed types of seals is used effectively for pumps handling toxic or highly flammable liquids that cannot be permitted to escape into the atmosphere?	Conventional stuffing box	External mechanical seal	Double mechanical seal	Rubber bellows mechanical seal	
11	2150	B	No two drills from differing drill sets are of the exact same size, with the exception of the drills measured as 0.25 inch. These two drills are the 1/4 inch and the _____.	No. 1 drill	"E" drill	No. 80 drill	"A" drill	
11	2151	A	In MODU construction, a large number of watertight bulkheads results in _____.	increased capacity to set flooding boundaries	decreased capacity to set flooding boundaries	reduced compartmentation	greater deck load capacity	
11	2152	D	Which of the following statements describes the advantage of the mechanical shaft sealing system over the stuffing box and packing method of shaft sealing for propulsion shafting?	It eliminates the repairing or renewing of the shaft sleeve.	It is fully automatic in operation.	It allows for the removal and reinstallation of all parts without dismantling the shafts.	Each of the above is correct.	
11	2153	A	The dimension of the sensing gap in the left hand limit sensor assembly shown in the illustration is _____.	1/8 inch	1/4 inch	3/8 inch	1/2 inch	GS-0010
11	2154	C	Zinc rods are installed in the refrigeration system _____.	liquid strainer	liquid receiver	saltwater condenser	evaporator	
11	2155	C	A single-acting simplex pump makes 100 single strokes per minute. The diameter of the water cylinder is 6 inches and the stroke is 10 inches. If the efficiency of the pump is 90%, what is the capacity of the pump?	92 GPM	61 GPM	55 GPM	18 GPM	

11	2156	D	Deck rails on passenger decks of vessels engaged in a ferry or excursion type operation shall be at least _____.	30 inches high	36 inches high	39 1/2 inches high	42 inches high	
11	2157	B	Each vessel designed to carry more than 49 passengers must have _____.	a continuous longitudinal watertight bulkhead	a collision bulkhead	at least one watertight bulkhead to prevent fire advancement for 2 hours	a minumum of four watertight bulkheads	
11	2158	A	The pressure side of the radial piston hydraulic motor as shown in the illustration, is aligned to piston number _____.	1	2	3	2 and 3	GS-0059
11	2159	A	A squealing sound generated by an operating reciprocating air compressor would indicate _____.	loose drive belts	badly leaking valves	compressor interstage leakage	tight drive belts	
11	2160	B	When shifting suction from one fresh water tank to another, if the fresh water pump loses suction you should _____.	loosen the mechanical seal	vent the pump casing	check the discharge strainers	all of the above	
11	2161	C	High salinity distillate being discharged from a flash-type distilling plant may be the result of _____.	maintaining the proper distilling plant heat balance	carrying the brine level below normal	leaks in the demister baffles	venting of the saltwater heater drain pump	
11	2162	D	Allowances may be made for the expansion and contraction in piping by the use of expansion joints or _____.	unions	retractable flanges	union bulkhead fittings	bends or loops in the line	
11	2163	B	For any given volume of compressed air produced by a multistage air compressor, interstage cooling will _____.	increase the power required for compression	decrease the power required for compression	allow isothermal compression of the air charge	allow the compressed air volume to remain constant	
11	2164	A	The zinc plates are located in the _____.	saltwater side of the condenser	refrigerant side of the condenser	evaporator coils	suction strainer	
11	2165	C	In the illustrated heating system, what is the maximum height the heater should be mounted above the deck?	5"	6"	12"	24"	GS-0150

11	2166	C	Solid contaminants are prevented from entering the main lube oil system by way of the main engine sump, through the use of _____.	fine mesh screening placed around the pump suction line in the sump	baffles installed without limber or lightening holes to trap the particles	a suction inlet located approximately 10 inches (254 mm) above the sump bottom	a 10 inch (254 mm) dome installed just below the suction inlet and provided with a pipe-opening within one inch of the dome	
11	2167	D	When the steering wheel is turned, oil is directed to the steering gear rams by _____.	modulating the oil flow with the six-way valve	moving the automatic pressure differential valve	moving the receiving telemotor which regulates the two-way valve	varying the eccentricity of a floating ring or angle of a tilting box	
11	2168	D	Penetrations and openings in watertight bulkheads in a vessel of less than 100 gross tons must _____.	only be placed in transverse watertight bulkheads that extend to the bulwark deck	be provided with non-packed slip joints for expansion to permit passage of piping or electric cable	incorporate approved sluice valves	be kept as high and as far inboard as practicable	
11	2169	B	Operating a reciprocating air compressor without an air filter will cause _____.	carbon deposits on valves and pistons	excessive wear on valves and cylinder liners	a clogged air intake	excessive compressor discharge pressure	
11	2170	D	Which of the flange types listed identifies the construction of a pipe joint where a flange is slipped over a length of pipe, the pipe end is heated, then setup (flanged) in a special machine, and then the end of the pipe is machined to form the actual face of the joint?	Raised face flange	Socket joint	Walseal joint	Lap joint (van stone) flange	
11	2172	D	Which of the following statements is correct concerning antifriction bearings installed on pumps?	The inner race should be free to turn on the shaft.	The outer race should be free to turn in its housing.	Alignment is not a critical factor in their installation.	They are usually pressed onto their shafts.	
11	2174	D	A water regulating valve controls the refrigeration condenser cooling water flow in response to condenser _____.	cooling water outlet temperature	liquid refrigerant outlet temperature	liquid refrigerant outlet pressure	refrigerant vapor inlet pressure	

11	2175	C	Which of the screwdrivers listed has a tip surrounded by parallel fluted ridges resembling the ridges of a splined socket wrench?	Phillips	Standard	Torx	Reed and Prince	
11	2176	A	Proper internal lubrication of a hydraulic anchor windlass left idle for extended periods can be accomplished by _____.	performing a check run on the unit at regular intervals	testing the hydraulic fluid for proper pH	checking the reservoir for proper level	cleaning strainers at regular intervals	
11	2177	B	If the flow rate to a linear actuator is reduced by half of the original amount, the _____.	pump discharge pressure will be reduced by a proportional amount	speed of the actuator will be reduced	speed of the actuator will be increased	the actuator will move erratically	
11	2178	D	Irregular feeding or surging of the feedwater supply to a flash evaporator may be attributed to _____.	erratic water flow through the air eductor	a clogged vent line from the air eductor condenser	excessive pressure in the seawater feed heater	a dirty strainer in the saltwater feed pump suction line	
11	2179	C	Operating a reciprocating air compressor without an air intake filter can result in a/an _____.	immediate piston damage	immediate clogging of the intake	possible explosion in the compressor	deposit of carbon on the valves	
11	2180	A	Machinery with ball bearings designed to be filled with grease should have the relief plug temporarily removed while grease is being added. This plug should remain out until the machinery has been operated and sufficiently warmed up to ensure that _____.	a path of expansion is provided for the grease	all air pockets are vented from the grease	dirt and grit are flushed from the bearing housing	the grease is properly distributed within the bearing	
11	2181	D	The top, front, and right side views of three different objects are shown in the illustration. In which object are all three views correct and complete?	#2	#16	#21	All of the above	GS-0004
11	2182	C	The nameplate of a reciprocating pump lists the following numerals as indicated 7" X 6" X 4". The diameter of the steam cylinder is _____.	4 inches	6 inches	7 inches	8 inches	

11	2183	B	Which of the screwdrivers listed is designed to protect small screws from being over tightened?	Magnetic screwdriver	Torque limiting screwdriver	Variable speed screwdriver with a jacobs chuck	Constant rpm screwdriver with a jacobs chuck	
11	2184	D	An arrow stamped on the valve body of a water regulating valve indicates the _____.	direction of the plunger slide	closed position	open position	direction of the flow	
11	2185	D	Which of the following frequent maintenance procedures is required of compressed air receivers?	A close watch on the temperature.	Constant cleaning to remove oil and dirt.	Constant testing of the relief valves.	Frequent draining of water.	
11	2186	B	The main difference between a common lathe dog and a safety lathe dog is that the latter _____.	is more easily centered	has a headless set screw	has a spring loaded catch	allows for misaligned center holes	
11	2187	A	The penetration of watertight bulkheads and watertight decks by rigid nonmetallic piping is prohibited except when _____.	using an acceptable metallic fitting, welded or otherwise is attached to the bulkhead or deck by an acceptable method	the rigid nonmetallic plastic pipe is at least of schedule 160 and a metallic shut off valve is provided adjacent to the through deck or bulkhead fitting	metallic shut off valves are welded to nonmetallic hull materials	two non-remotely operated metallic valves are installed on either side of the deck or bulkhead regardless of accessability	
11	2188	C	The brake horsepower of a centrifugal pump will vary directly as the _____.	diameter of the impeller	square of the diameter of the impeller	cube of the diameter of the impeller	impeller efficiency for large changes in the size of the impeller	
11	2189	A	In the illustrated schematic, the device used to replace the six-way valve, as found on many older type steering gears, is the component labeled as _____.	"A"	"B"	"F"	"H"	GS-0123
11	2191	C	Which type of Marine Sanitation Device (MSD) is used solely for the storage of sewage and flushwater at ambient air pressure and temperature?	Type I	Type II	Type III	Type IV	

11	2192	D	Any unusual, or new vibration in the hull or propeller shafting can be an indication of _____.	clutch slippage	overheated bearings	high engine speeds	propeller unbalance	
11	2194	D	A reheater in an air conditioning system functions to _____.	control inlet air temperature	control inlet air volume	maintain relative humidity at 15%	restore conditioned air temperature to a comfortable level	
11	2195	B	Oiling a file as a rust preventative may cause _____.	overheating	pinning	fast cutting	binding	
11	2196	A	For cutting cast iron or soft steel, the proper hacksaw blade should have _____.	14 teeth per inch	18 teeth per inch	24 teeth per inch	32 teeth per inch	
11	2198	C	An air tank rusts out, explodes and causes $(USA) 24,000 damage to the engine room. By law, this accident is required to be reported to _____.	the owner or his agent	the insurance underwriter	no one	the U.S. Coast Guard	
11	2199	D	If the suction pressure increases to a capacity controlled compressor used in a multi-box refrigeration system, the actions of the unit shown in the illustration should cause _____.	"H" to move away from "I", the pressure in "M" to drop, "K" to move down, and "V" to move "S" upwards	"H" to move towards "I", the pressure in "M" to increase, "K" to move down, and "S" to move down against the force of "V"	"H" move away from "I", the pressure in "R" to decrease, allowing "S" to move down against the force of "V"	"H" to move towards "I", the pressure in "R" to increase, forcing "S" to move down against the force of "V"	RA-0013
11	2200	D	In the device shown in the illustration, what is the function of item "6"?	It senses temperature for use in the temperature control circuit.	It is used to maintain liquid level one inch below item "8".	Both items of #6 are anodes used to provide the tank with corrosion protection.	It is used to control the oil discharge mode.	GS-0153
11	2201	B	According to Coast Guard Regulations (33 CFR), which of the listed types of Marine Sanitation Devices (MSD) treats sewage to maintain the minimum bacteria count level for overboard discharge, on vessels built after January 30, 1975?	Type I	Type II	Type III	Type IV	

11	2203	A	'Respiratory heat' is a term applied primarily to which of the following cargoes?	Fresh vegetables	Meat	Frozen vegetables	All of the above	
11	2204	A	To prevent the unnecessary loading of an air conditioning system while maintaining the designed dry bulb temperature and relative humidity in an air conditioning system, you should _____.	admit only enough fresh outside air to provide proper ventilation	reduce the air reheating system load	lower the compressor head pressure	operate the purge recovery unit continuously	
11	2205	C	Which of the files listed will have coarsely spaced teeth?	Second cut	Dead smooth cut	Bastard cut	Smooth cut	
11	2208	A	If the signal input to 'P4' is 48psi, and the supply pressure is 50 psi, the output pressure at 'P1', as shown in the illustration, will be equal to _____.	0 psi	10 psi	25 psi	50 psi	GS-0145
11	2210	D	Screwdrivers designed for electrical use should have _____.	longer than normal shanks	larger than normal shanks	shorter than normal shanks	insulated handles	
11	2211	B	Which of the files listed is produced with two safe edges?	Mill	Pillar	Half round	Knife	
11	2213	D	Which of the listed statements describes specific heat?	The amount of heat required to change the temperature of one pound of a material, one degree F.	The amount of heat required to change the temperature of one pound of ice, one degree F.	The amount of heat required to change the temperature of one pound of butter, one degree F.	All of the above.	
11	2214	A	To add refrigerant to the low side of an air conditioning system, the refrigerant should be introduced through the _____.	suction service valve as a vapor	suction service valve as a liquid	discharge service valve as a vapor	charging valve as a liquid	
11	2215	C	Which of the following devices is not considered to be a pressure vessel? (46 CFR)	Low pressure evaporator	Deaerating feed heater	Hydraulic fluid power cylinder	Fuel oil heater	
11	2217	B	Which of the files listed is commonly referred to as a 'rattail' file?	Small half round	Small round	Small triangular	Small flat	
11	2218	C	Which of the screwdrivers listed is fastest and most convienent when tightening many screws?	Square shank	Offset	Ratchet	Standard	

11	2219	B	Which of the screwdrivers listed is designed for the precision assembly of small parts?	Ratchet	Jeweler's	Allen head	Square-shanked	
11	2220	D	You discover an air leak at the manhole cover shortly after pressurizing a P-tank. You must _____.	reduce the P-tank pressure to 25-30 psi to complete the dry material transfer	increase the P-tank pressure to the unloading valve setting to force the manhole cover to seat itself	complete the dry material discharge before attempting any repairs	depressurize the tank, replace the gasket, then tighten the bolts securing the hatch cover	
11	2221	C	A refrigeration system is operating as a simple saturated cycle with an evaporator temperature of 0°F, and a 120°F condensing temperature. Using the table shown in the illustration, determine the weight of the refrigerant circulated through the system.	2.56 lb/min/ton	3.56 lb/min/ton	4.75 lb/min/ton	5.55 lb/min/ton	RA-0023
11	2222	D	What is the normal direction of flow through the device shown in the illustration while operating in the processing mode?	The oily-water mixture enters through valve "14" and exits with the processed liquid through valve "4".	The oily-water mixture enters through the pressure control valve "2" and exits with the processed liquid through valve "14".	The oily-water mixture enters through valve "4" and exits as processed liquid through valve "14".	The oily-water mixture enters through valve "5" and exits the separator through valve "14" as processed liquid.	GS-0153
11	2223	A	Unusual hull, or propeller shaft vibrations can be caused by _____.	excessive engine speed in shallow water	slop in a hydraulic clutch	slight overheating of the line shaft spring bearings	high engine speed in deep water	
11	2224	C	If a refrigeration compressor in a multi-box system runs continuously, the cause might be a _____.	high pressure switch stuck in the closed position	clogged mechanical scale trap	shortage of refrigerant	defective thermal bulb	
11	2225	C	According to regulations (46 CFR), a boiler combustion control system may be tested at _____.	a pressure not less than 1.25 times the maximum allowable working pressure	a pressure not less than 1.5 times the maximum allowable working pressure	the maximum allowable working pressure of the system	the normal operating pressure of the system provided full loading is accomplished	

11	2226	B	The barge shown in the illustration is 40' X 20' X 10'and weighs 22.9 long tons when empty. The theoretical maximum amount of machinery and cargo which may be installed or loaded is _____.	182.9 long tons	205.6 long tons	228.8 long tons	243.3 long tons	GS-0157
11	2227	D	The terms rough, coarse, bastard, second cut, smooth, and dead smooth refer to the _____.	distance between the parallel cuts of a file	size of the file	coarseness of file teeth	both A and C are correct	
11	2228	D	By which of the listed methods may heat be transferred from one body to another?	Radiation	Convection	Conduction	All of the above	
11	2229	C	Which of the screwdrivers listed is designed with the shaft made from double coil wire or tightly coiled steel?	Square shank	Ratchet	Flexible shaft	Jeweler's	
11	2230	D	A file coated with oil and stowed away will _____.	cause the file to overheat	cause the file to slide across the work and prevent fast, clean cutting	cause dust and metal particles to collect in the teeth	both B and C are correct	
11	2231	D	Determine the volume of vapor compressed per minute per ton in a simple saturated refrigeration system using the table shown in the illustration. The evaporator temperature is 0°F, with a condensing temperature of 120°F.	1.07 cu ft/min/ton	4.75 cu ft/min/ton	6.39 cu ft/min/ton	7.77 cu ft/min/ton	RA-0023
11	2232	B	The length of a file is always measured exclusive of the _____.	edge	tang	point	heel	
11	2233	B	Which of the saw blades listed, when mounted in a hand held hacksaw frame, can be used to cut an intricate shape with precision?	Hardened	Rod	Dull	Flexible	

11	2234	B	The surging that occurs in a centrifugal air conditioning compressor is a result of _____.	low pressure in the condenser	the existing load on the evaporator producing a thermodynamic head exceeding the normal maximum of the compressor	low pressure in the condenser at low load	high pressure in the evaporator at high load	
11	2235	D	Which of the following statements describes the accepted method for testing a thermostatic expansion valve?	Heat the bulb by using a halide torch or similar device and observe the valve stem movement.	Remove the power head from the unit, heat the bulb with a torch while using a scale to measure the distance the diaphragm has moved.	Chill the bulb in ice water while observing the compressor for an increase in suction pressure.	Place the sensing bulb in ice water and then warm by hand. Observe flood-through and temperature change at the suction line.	
11	2236	A	An operating refrigeration system uses the device shown in the illustration. The high pressure gage indicates an abnormal decrease in the head pressure. The probable cause can be related to _____.	fouling of the unit labeled as "I"	item "M" being screwed up to the stops	component "E" having backed off from its seat	component "H" has exceeded its elastic limit	RA-0015
11	2237	D	Which of the files listed is tapered on three sides and is used to file acute internal angles?	Mill	Round	Square	Triangular	
11	2238	B	Which of the screwdrivers listed is produced with a tip to fit screws with a fourway or cross slot?	Standard	Reed and Prince	Allen	Torx	
11	2239	B	To cut drill rod, light angle iron, or tool steel with a hand hacksaw, it is best to use a blade with _____.	14 teeth per inch	18 teeth per inch	24 teeth per inch	32 teeth per inch	
11	2240	A	What is the lowest permissible flashpoint of the oil used in a hydraulic valve actuating system that operates at 145 psi (1000kPa)? (46 CFR)	200°F (93°C)	212°F (100°C)	300°F (149°C)	315°F (157°C)	

11	2241	C	In a simple saturated cycle refrigeration system, the enthalpy of the vapor after compression is 95 BTU/lb. with an evaporation temperature of 0°F. Which of the listed values represents the heat of compression per pound of refrigerant circulated?	4.75 BTU/lb	8.25 BTU/lb	16.79 BTU/lb	The correct answer is not obtainable due to the insufficient quantity of data given.	RA-0023
11	2242	D	Provision is made to control the amount of current drawn by the compressor of the container refrigeration system shown in the illustration. Under normal circumstances, the modulation valve assists in this task. Which of the following statements details the alternate method of controlling current flow when the microprocessor is faulty?	The current is displayed on the microprocessor, allowing the operator to manually adjust the modulation valve while observing the amount of current being drawn.	Line 'C1' of the compressor contactor is to be disconnected, resulting in a decrease the current flow, and does not require the use of an 'amp clamp'.	By using a variable rheostat connected across the 'comp high' terminal, the current being drawn is limited.	Utilizing an 'amp clamp', the current drawn may be adjusted by throttling either the suction valve of the compressor or the receiver tank outlet valve.	RA-019B
11	2243	A	Which of the saw blades listed, when mounted in a hand held hacksaw frame, will cut on both the forward and reverse strokes?	Rod	Hardened	Flexible	None of the above	
11	2244	C	Any air mixture whose dew point remains constant will also have an unchanging _____.	dry bulb temperature	wet bulb temperature	specific humidity	specific volume	
11	2245	A	A fluid power system shall be so designed _____.	that proper functioning of any unit shall not be affected by the back pressure in the system	to maintain a back pressure throughout the power cylinders operating range	such that the operation of any unit in the system will provide for sufficient back pressure	none of the above are correct	
11	2246	D	If component "C" shown in the illustration is fully seated, it should be expected that the _____.	total force above "H" is less than the total force below "H"	pressure existing within "N" is greater than 150 psig and is slowly rising	pressure measured at the water inlet and outlet are equal at any specific moment	unit is in a condition of operational equilibrium	RA-0015

11	2248	C	A simple saturated refrigeration cycle is operating with a 120°F condensing temperature and a 0°F evaporator temperature. Using the table provided, determine the refrigeration effect per pound of refrigerant in circulation.	11.94 BTU/lb	81.9 BTU/lb	42.05 BTU/lb	44.41 BTU/lb	RA-0023
11	2249	D	If item "1" in the illustrated oily water separator indicates an abnormally high vacuum, which of the following conditions is the most probable cause?	Process water inlet valve, item "5", is open.	Coalescer beds are severely fouled.	No problem exists as a high vacuum should be maintained in the chamber whose vacuum is be measured.	Suction line inlet strainer is obstructed.	GS-0153
11	2250	B	A hacksaw blade with 14 teeth per inch should be used to cut _____.	angle iron and heavy pipe	cast iron and soft steel	thin tubing or sheet metal	drill rod and tool steels	
11	2251	B	Which of the files listed will have medium spaced teeth and is used for general work?	Dead smooth	Second cut	Bastard cut	Smooth cut	
11	2252	C	Which of the files listed is tapered on all sides and used to enlarge rectangular-shaped holes and slots?	Round	Half round	Square	None of the above	
11	2253	A	A refrigerated container filled with 10,000 lbs. of strawberries has been loaded on your ship. The set point of the box is 35°F and the interior box temperature is 90°F, and after 7 hrs. 37 minutes the box is lowered to 60°F. Based on the following information, which of the listed steps should be taken? Specific heat of cargo is 0.94 BTU/LB/°F, heat gain by container equals 4,000 BTU/hr., and refrigeration system capacity equals 3.42 tons.	Do nothing as the system is operating correctly.	The compressor is worn out and should be replaced.	Replace the liquid line strainer.	Add freon to the unit to increase the refrigeration effect.	
11	2254	A	The dew point is reached when the wet bulb temperature is _____.	equal to the dry bulb temperature	twice the dry bulb temperature	100°F less than the dry bulb temperature	50°F above the dry bulb temperature	

11	2255	A	If the superheat value of a thermostatic expansion valve is set too low, the _____.	the suction line will be abnormally cold and liquid may slug back to the compressor	the suction line will be hot due to a reduced amount of refrigerant returning to the compressor	the temperature of the refrigerant within the condenser will remain the same	the temperature of the refrigerant passing through the subcooler will decrease	
11	2256	D	The ball float shown in the illustration is 12 inches in diameter, with an effective float arm of 35 inches and floats in a liquid with a specific gravity of 0.5. What is the available operating torque?	120 inch pounds	200 inch pounds	240 inch pounds	280 inch pounds	GS-0158
11	2257	B	Using a file without a handle may result in _____.	your work becoming rounded	injury to your hand	overheating of the file	pinning	
11	2259	C	A new file should be broken in carefully by filing a piece of _____.	monel stock using heavy pressure	brass stock using heavy pressure	bronze stock using light pressure	stainless steel stock using light pressure	
11	2260	B	The edge of a file not having any teeth is known as a _____.	smooth edge	safe edge	flat edge	dead edge	
11	2261	B	In a simple saturated cycle refrigeration system, the enthalpy of the compressed gas is 95 BTU/lb and the weight of compressed vapor is 4.75 lb/min/ton, operating at an evaporation temperature of 0°F, and a condensing temperature of 120°F. Using the data from the table shown in the illustration, determine the value of the heat of compression per minute per ton of refrigerant circulated.	78.21 BTU/min/ton	79.75 BTU/min/ton	90.15 BTU/min/ton	95.00 BTU/min/ton	RA-0023
11	2263	B	A saw blade produced of bonded tungsten-carbide particles and mounted in a hacksaw frame is known as a _____.	wave set blade	rod saw blade	hardened blade	flexible blade	
11	2264	C	In the refrigeration system shown in the illustration, part "K" is the _____.	compressor	condenser	expansion valve	evaporator	RA-0012

11	2265	B	If a thermostatic expansion valve is adjusted for too high a superheat value _____.	all of the system liquid will flow to the evaporator coil	an insufficient amount of liquid will be fed to the evaporator	an excessive amount of liquid will be fed to the evaporator	only the required amount of refrigerant will enter the evaporator regardless of the required superheat value	
11	2266	A	The ball float shown in the illustration is 9 inches in diameter and is floats in a liquid with a specific gravity of 0.9. If the effective length (EL) is 18 inches and "L" is 3 inches, how many pounds of force will be available at "X" if there is no mechanical loss?	36	108	162	324	GS-0158
11	2267	D	Pinning is often caused by _____.	dropping the file	chalking the file	cleaning the file	bearing too hard on the file	
11	2269	A	Which of the items listed is used to prevent over pressurization in the device shown in the illustration?	Item "2"	Item "14"	Item '16'	This device is never exposed to excessive internal pressures.	GS-0153
11	2270	A	Which of the following conditions will occur if the power element of a thermostatic expansion valve fails?	The valve will move towards the closed position.	The valve will begin to close, but the external equalizing line will assist in keeping the valve unseated.	The valve will fail open as designed to provide continuous cooling.	The valve will fail open and the cooling capacity will be increased.	RA-0007

11	2271	D	Which of the following represents the primary cause of the pressure drop between points A and A', as shown in the illustration?	The reduction of pressure is due to the decrease in velocity of the liquid refrigerant leaving the receiver.	The condensing of the flash gas causes the volume to be decreased thereby reducing the pressure.	The adiabatic expansion causes an isentropic effect on the liquid.	The pressure drop is a result of the frictional loss of the liquid flow through the receiver and the liquid line.	RA-0022
11	2272	A	It is not necessary to 'chalk' a file when the metal being filed is _____.	steel	copper	lead	aluminum	
11	2273	B	Which of the saws listed would be more suitable for cutting metal in tight quarters or flush to a surface where a hand held hacksaw frame could not be used?	Coping saw	Stab saw	Back saw	Hole saw	
11	2274	D	The function of a heat interchanger used in a refrigeration system is to _____.	lower the temperature of liquid refrigerant before entering the expansion valve	reduce the possibility of liquid refrigerant from flooding back to the compressor	minimize sweating of the suction line	All of the above.	
11	2275	B	According to regulations (46 CFR), who may grant an extension of the tailshaft examination interval?	Officer in Charge, Marine Inspection office	Commandant (G-MOC)	Authorized Representative of the American Bureau of Shipping	Official Representative of the Naval Pollution Control Office	
11	2276	C	The device shown in the illustration is used as a _____.	thermostatic, evaporator, refrigerant regulating valve	thermostatic, back pressure regulator	pressure actuated, refrigeration system, condenser cooling water, regulating valve	gas pressure reducing valve	RA-0014
11	2277	C	It is necessary to 'chalk' a file when the metal you are filing is _____.	mild steel	stainless steel	aluminum	monel	

11	2279	C	What is the theoretical time necessary to reduce the temperature of 40,000 pounds of onions (placed in a refrigerated container) from 75°F to a set point temperature of 46°F? The specific heat of onions is 0.90 BTU/LB/°F. The trailer heat gain is 6,500 BTU/hr, with a properly operating refrigeration cooling capacity of 45,500 BTU/hr.	6 hours 5 minutes	13 hours 16 minutes	26 hours 48 minutes	52 hours 12 minutes	
11	2281	C	A pressure drop is exhibited between points B' and C', as shown in the illustration. Which of the following statements describes this occurrence?	As the liquid flows through the expansion valve, its pressure is dropped as a result of friction only.	The drier element obviously requires replacement due to its saturated condition and is the contributing factor for the pressure drop through the liquid line.	The gas flow restriction through the evaporator coil is the origin of this condition and a universal characteristic of fluid flow through most heat exchangers.	The thermodynamic principle of 'heat in equals heat out' is responsible for the pressure drop indicated by the equal vertical distances between B and B', C and C'.	RA-0022
11	2282	D	Which of the relays shown in the illustration may be used to replace the relays used to energize the compressor contactor and the evaporator fan high speed contactor?	The relays labeled 'K1' and 'K6', provided a suitable jumper is used.	The relays labeled 'K1' and 'K4', the latter relay not being necessary for frozen loads.	The relays should never be exchanged due to very distinctive current and power ratings for each.	All of the relays indicated in the microprocessor are interchangeable, however, in this case replace K7 with K6.	RA-0020
11	2283	B	When cutting sheet metal too thin to be held in your hand while using a hand held hacksaw, the sheet metal should be placed between two _____.	blocks of steel	blocks of wood	pieces of sand paper	pieces of cloth	

11	2284	B	When opening or closing compressor service and line valves on a typical refrigeration system, you _____.	should turn valves slowly to avoid thermal stresses due to low temperatures	must first remove the seal cap	should examine the gasket frequently to ensure that it is flat	should never tighten the packing gland	
11	2285	D	When any vessel is drydocked, examination shall be made of the propeller, _____. (46 CFR)	fairwater cone and hull anodes by the Chief Engineer assigned to the vessel	propeller coupling and flange fasteners by the authorized inspector of the repair facility	keel and stabilizing fins by a registered marine engineer	stern bushing, sea connection and fastenings if deemed necessary by the marine inspector	
11	2286	A	The set point adjustment of the device shown in the illustration is made by rotating _____.	"A"	"B"	"D"	"H"	RA-0014
11	2287	B	While filing, you can prevent pinning by keeping the file clean and rubbing the teeth of the file with _____.	light oil	chalk	talc	graphite	
11	2288	B	An obstructed expansion valve may be indicated by an incompletely cooled evaporator and _____.	a higher than normal discharge pressure	frosting at the evaporator inlet	a decrease in the amount of frosting across the drier	frosting at the suction side of the compressor	
11	2289	C	The dashed line to the illustrated pump is the _____.	pump relief valve outlet to the sump	pump capacity control feedback loop	casing drain	system replenishing line	GS-0049
11	2290	B	The components indicated as "7" and "8" as shown in the illustration, are known as the _____.	outlet weir and outlet baffle	inlet weir and inlet baffle	first stage oil separator and drip pan	second stage oil separator and drip pan	GS-0153
11	2291	B	Which of the following statements describes the thermodynamic changes to the refrigerant occurring between points C' and C'', as shown in the illustration?	The specific volume is decreasing as a result of an apparent reduction in pressure developed by the displacement volume of the compressor.	The specific volume is increasing along with a reduction in pressure resulting from the flow of refrigerant through the suction piping.	The entire process can be mathematically explained by the PASS system of analytical thermodynamic procedures.	None of the above describes the changes that are occurring.	RA-0022

11	2292	B	Mill files are always _____.	double cut	single cut	Swiss patterned	second cut	
11	2293	D	Which term applies to a hacksaw blade having short sections of teeth bent in opposite directions?	Alternate	Double alternate	Rake	Wave	
11	2294	A	If a liquid drying agent is used in a refrigeration system already equipped with a solid drying agent, the liquid drying agent will _____.	release the moisture already trapped in the solid drying agent	react violently with the solid drying agent	cause toxic gases to form in the refrigerated space	solidify the refrigerant oil in the compressor crankcase	
11	2295	B	One of the determining factors regulating the time interval for drawing a vessel's tailshaft depends upon the design to reduce stress concentrations. Which of the following factors, in part, would be considered to meet this design criteria?	Sprocketed keyway and slotted key.	Stress relief grooves at the forward end of the propeller and aft end of the liner.	Keyway is to be cut so as to give a sharp rise from the bottom of the keyway to the shaft surface.	All of the above.	
11	2296	B	According to Coast Guard regulations (46 CFR) lamp, paint and oil lockers, and similar compartments shall _____.	suitably insulated from any woodwork or other combustible matter	be constructed of steel or shall be wholly lined with metal	not be located at the end of a corridor in excess of forty feet in length	be so arranged to prevent excessive movement of its contents during periods of foul weather	
11	2297	D	Double cut files are used for _____.	quick removal of metal	finish work	rough work	both A and C	
11	2298	A	Which of the files listed will have closely spaced teeth for finishing to a smooth surface?	Smooth cut	Bastard cut	Second cut	Rough cut	

11	2299	D	Your vessel has received a refrigeration container of 16 long tons of cabbage, loaded at 1700 hours on Friday, with a beginning temperature of 80°F. At what time on Saturday will the box theoretically reach its set point temperature of 50°F, assuming the system is operating correctly? The specific heat of cabbage is 0.94 BTU/LB/°F. The container has a heat gain of 6,000 BTU/hr, and the refrigeration system's capacity is 40,000 BTU/hr.	Saturday at 0012 hours.	Saturday at 0724 hours.	Saturday at 1242 hours.	Saturday at 2242 hours.	
11	2300	B	If an expansion valve is adjusted for too low a superheat value _____.	the efficiency of the unit will be increased	too much liquid will be passed back to the compressor	the box temperature will increase causing an expansion of the volume of air	the refrigeration effect will increase contributing to uncontrolled box temperatures	
11	2301	C	The apparent pressure drop between points C'' and C''', as shown in the illustration, is a result of _____.	the flow of the refrigerant through the dehydrator	the flow of the refrigerant through the liquid line solenoid	the flow of the refrigerant through the passages and suction valves of the compressor	the flow of the refrigerant through the cylinder heating device	RA-0022
11	2303	A	Reduced capacity, accompanied by vibration and noise at the suction of a centrifugal pump, results from cavitation in the fluid being pumped. Cavitation describes the formation of _____.	vapor pockets	water hammer action	fluid friction	steam knock	
11	2304	D	Overcharging an air-cooled refrigeration system will cause the _____.	relief valve to lift	compressor to run continuously	system to automatically change over to the hot gas defrost cycle	compressor to short cycle	

11	2305	B	The actual position of the needle valve in the device shown in the illustration is dependent upon which of the following conditions?	The pressure developed as the liquid flows through the expansion valve.	The effects of the pressure developed in the sensing bulb opposed in part by the pressure acting against the diaphragm provided by the equalizing line.	The force of the valve spring only.	The amount of superheat added to the gas discharged to the condenser.	RA-0007
11	2306	B	Which of the problems listed could happen if you attempted to force open a valve 'frozen' in position by using a wrench on the handwheel?	Bending of the bonnet assembly	Bending of the valve stem	Damage to the pressure seal	Distortion of the valve body	
11	2307	C	The ball float shown in the illustration is 9 inches in diameter, with an effective float arm of 27 inches and floats in a liquid with a specific gravity of 1.0. How much operating torque will be available?	120 inch pounds	143 inch pounds	180 inch pounds	243 inch pounds	GS-0158
11	2308	A	Archimedes' principle states that the resultant pressure acting on a body immersed in a fluid _____.	acts vertically upward through the center of gravity of the displaced fluid and is equal to the weight of the fluid displaced	will cause the body to have a reduction in mass equal in magnitude to the effective mass of the structure located above the line of floatation	is proportional in magnitude and direction, regardless of the direction originally developed when the object was submerged	is applied equal and in all directions throughout the vessel in which it is contained	
11	2309	C	What device shown in the illustration is used to prevent excessive internal pressures within the unit during its operation?	An automatic valve, item #14 opens to prevent excessive pressure.	A rupture disc, item #16 ruptures causing the pressure to drop.	Internal tank pressure overcomes the spring force in item #2 causing it to open.	This device is never exposed to excessive internal pressures.	GS-0153
11	2310	C	When mounted in a hand held hacksaw frame, which of the blades listed could cut smoothly through a metal file?	Wave set	Hardened	Rod	Flexible	

11	2311	D	As shown in the illustration, point D'' is slightly higher than point D'. This difference is representative of _____.	the higher degree of superheat absorbed during the compression process	an esoteric condition of the refrigerant during adiabatic contractions	the additional pressure found in the system due to normal amounts of air	the additional pressure required to force the discharge valves open	RA-0022
11	2312	D	Which of the following statements represents the function of the power factor correction capacitors (PCC) shown in the illustration of the refrigeration system controller?	The contacts shown at PCC are only used for reversing the compressor rotation if the phase sequence of the unit is incorrect.	When phase sequence anomalies exist, the PCC is used to automatically remove all inductive loads from the compressor motor.	The programmed circuit control functions to maintain the high starting torque required for refrigeration compressors.	The capacitors lower the current drawn by the compressor drive motor and effectively lowers the total current drawn by the unit.	RA-0020
11	2313	C	Which of the valves listed for the device shown in illustration will be open while the unit is operating in the backflush mode?	valve "4"	valves "4" and "5"	valves "4" and "14"	valves "4", "5", and "14"	GS-0153
11	2314	B	Which of the listed components, shown in the illustration is designed to close when the refrigerant low side pressure reaches its upper normal limit?	J	E	F	I	RA-0005
11	2315	D	Which of the statements listed accurately applies to controllable pitch propeller systems?	A pitch indicator is to be fitted on the navigation bridge for vessels 400 gross tons and above.	Independent remote control of pitch is to be provided at or near the oil distribution box. Tests of its operation are to be performed in the presence of the Surveyor.	After installation in the vessel, the complete piping system is to be subjected to a hydrostatic test equal to 1.25 times the design pressure.	The arrangement of piping is to be such that a single failure in one part of the piping or pump unit will not impair the integrity of the remaining parts of the system.	

11	2316	D	According to Coast Guard regulation (46 CFR), an "A" class division, bulkhead or deck shall be constructed _____.	with approved incombustible materials and made intact from deck to deck and to shell or other boundaries	of approved incombustible materials, but need meet no requirements relative to the passage of flame	that if subjected to the standard fire test, they would be capable of preventing the passage of flame for one half hour	that if subjected to the standard fire test, they would be capable of preventing the passage of flame and smoke for one hour	
11	2318	C	If the device shown in the illustration is used in a refrigerating system, which of the following statements would be correct regarding an increase in the system head pressure?	"A" will remain seated as downstream pressure acts on the upper surface of "H", allowing "F" to lift.	The reduction in downstream pressure at the valve outlet will act on "C" to unseat it, allowing "F" to lift.	An increase in the refrigerating system pressure will cause "C" to unseat, causing the pressure above "H" to drop, and thereby allowing the inlet pressure to lift "H".	Even if "C" does not lift off of its seat, the flow rate of water passing "P" will result in sufficient drag above "H" to force the main valve to lift.	RA-0015
11	2319	C	In a simple saturated refrigeration cycle, which of the listed values represents the quantity of heat rejected by the refrigerant circulated at the condenser? The enthalpy of the compressed gas is 95 BTU/lb, with a condensing temperature of 120°F and an evaporating temperature of 0°F.	58.84 BTU/min/ton	78.21 BTU/min/ton	279.86 BTU/min/ton	451.25 BTU/min/ton	RA-0023
11	2320	B	A fine wire bristled brush used for cleaning files is called a _____.	file brush	file card	pulling brush	cleaning card	
11	2321	D	The pressure drop of the refrigerant occurring to the flow through the discharge line and condenser, shown in the illustration, is represented by points _____.	A' and B'	B' and C'	C' and D	D' and A	RA-0022

11	2322	C	What is the function of the device labeled PSC shown in the illustration of the refrigeration system controller?	The pressure sealed container (PSC) is incorporated into the controller to environmentally protect all overload devices.	This device insures the operator never having to change the connections within a power supply plug.	The PSC is part of the phase sequence selector and is used to ensure proper rotation of all motors utilized with this system.	All of the above.	RA-0020
11	2323	A	The type of tooth set on a hacksaw blade where the teeth are continuously staggered with one to the left and one to the right is known as _____.	alternate	double alternate	raker	wave	
11	2324	B	Relative humidity can be determined by using a psychrometric chart and a/an _____.	hydrometer	sling psychrometer	aneroid barometer	compound barometer	
11	2325	A	A small obstruction at the thermostatic expansion valve inlet will result in which of the following conditions?	Suction pressure fluctuation.	Hunting as indicated by fluctuations of the discharge pressure.	Expansion valves are designed to pass small foreign particles so no adverse condition will occur.	Ice is the sole cause of this and will soon melt due to superheat; no adverse condition will occur.	
11	2326	C	According to Coast Guard regulations (46 CFR), a "B" class bulkhead shall be constructed _____.	of steel or equivalent metal construction, suitably stiffened and made intact from deck to deck and to shell or other boundaries	of approved incombustible materials, but need meet no requirements relative to the passage of flame	that if subjected to a standard fire test, they would be capable of preventing the passage of flame for one half hour	that if subjected to the standard fire test, they would be capable of preventing the passage of flame and smoke for one hour	

11	2328	D	If the head pressure of a refrigerating system, serviced by the device shown in the illustration begins to drop below set point, which of the following statements would hold true?	The outlet pressure would be fed back through "P" to directly act upon the upper surface of "H".	Component "C" would be forced off of its seat, allowing the water pressure via "J" to increase to act upon and force "H" down, causing "F" to close.	As the feedback pressure through "O" would decrease, the direct mechanical linkage of "L", "C", and "G" would cause the main valve "F" to close.	Component "C" would be reseated, allowing the increase in the force acting above "H" to reseat the main valve "F".	RA-0015
11	2331	B	A refrigeration system has a condensing temperature of 110°F, with subcooling to 90°F, and an evaporator temperature of 40°F, with the gas temperature to the compressor suction at 70°F superheat. Using this information and the chart shown in the illustration, determine the refrigeration effect per pound of refrigerant circulated.	45.20 BTU/lb	54.01 BTU/lb	70.74 BTU/lb	101.41 BTU/lb	RA-0023
11	2332	D	The evaporator fans of the refrigeration system as shown in the illustration are two speed. Which of the following statements properly describes the factors controlling the speed of the fans?	The fans will exclusively operate in the high speed range when both the 'EFH' and the 'EF' operating coils are energized.	Two sets of contactors vary the operating voltages of four winding configurations, allowing dual speed capabilities for two separate motors.	The evaporator blower speed is determined by the output of the current coil. As the compressor load is increased, the blower speed is reduced to eliminate electrical overloading.	Evaporator blower speed is determined by the evaporator return air sensor.	RA-0020
11	2333	A	The term referring to the amount or degree the teeth of a hacksaw blade are pushed out or canted from the blade center is known as _____.	set	pitch	choke	blade cut	

11	2334	D	A lower thermostatic temperature setting will provide a desired degree of comfort in a room where _____.	low relative humidity is maintained	triple banded squirrel cage fans are used	air circulation is a maximum	high relative humidity is maintained	
11	2335	C	The valve labeled "4", for the device shown in the illustration, is the _____.	pump suction valve	oily water inlet regulating valve	oil discharge valve	flow control valve	GS-0153
11	2336	B	According to Coast Guard regulation (46 CFR), a "C" class division, bulkhead or deck shall be constructed _____.	with approved incombustible materials and made intact from deck to deck and to shell or other boundaries	of approved incombustible materials, but need meet no requirements relative to the passage of flame	that if subjected to the standard fire test, they would be capable of preventing the passage of flame for one half hour	that if subjected to the standards fire test, they would be capable of preventing the passage of flame or smoke for one hour	
11	2337	B	The teeth of a file may 'clog up' with metal filings and scratch your work. This condition is known as _____.	binding	pinning	drawing	jamming	
11	2338	D	If the input signal at 'P4' is 51 psi, and the supply pressure is 50 psi, then the output pressure at 'P1', shown in the illustration will be _____.	0 psi	25 psi	40 psi	50 psi	GS-0145
11	2339	C	According to Coast Guard regulations (46 CFR Part 92), a standard fire test is one _____.	of many initial operating tests performed on newly commissioned boilers	which is used to determine the flash point of various marine fuels	which develops a series of time temperature relationships in a test furnace	in which all emergency firefighting and related safety equipment are tested	
11	2340	C	If the superheat value of the thermostatic expansion valve is adjusted too high the _____.	box temperature will continually rise	rate at which condensation occurs on the evaporator coils will increase	suction line of the compressor will be abnormally warm	rate at which condensation occurs within the coils will increase	

11	2341	D	A refrigeration system has an evaporating temperature of 40°F, and the liquid is subcooled to 90°F. Calculate the weight of refrigerant circulated per minute per ton using the table shown in the illustration.	1.97 lb/min/ton	2.41 lb/min/ton	2.82 lb/min/ton	3.70 lb/min/ton	RA-0023
11	2342	D	If the amount of current flow through the operating coils of the various contactors, shown in the illustration, increases above three amps, which of the circuit breakers listed will trip?	CB2	CB3	CB4	none of the above	RA-0020
11	2343	C	Sawing faster than a rate of 40 to 50 strokes per minute while using a hand held hacksaw will generally _____.	sharpen the blade	cause the blade to cut faster	dull the blade	not change how the blade cuts	
11	2344	D	In an air conditioning system, moisture is removed from the air by _____.	filters	separators	ducted traps	dehumidifiers	
11	2345	D	What maintenance may be carried out on a thermostatic expansion valve?	The thermal bulb may be recharged.	The rate action may be increased.	The proportional action may be varied.	The inlet screen may be cleaned.	
11	2346	B	Which of the valves listed is connected to the suction side of the pump used in conjunction with the device shown in the illustration?	valve "4"	valve "14"	valve "5"	A valve is not required as the pump is directly attached to the bottom of the tank.	GS-0153
11	2347	C	If the microprocessor shown in the illustration is indicating the fault 'Defrost Terminated on Time Limit', which of the following statements indicates the problem and the action taken by the controller?	As no electric cycle defrosting has occurred, the microprocessor initiates the hot gas defrost cycle.	The three way valve has not shifted and the microprocessor automatically turns on the electric heater elements.	The microprocessor has terminated the defrost cycle after 45 minutes of elapsed time, not having sensed a coil temperature of 23.9°C.	The pneumatic relay main contacts have closed, causing the unit to return to the cooling cycle.	RA-0020

11	2348	A	As shown in the illustration, an increase in pressure in the equalizing line tends to _____.	close the expansion valve	increase the delivery of refrigerant to the evaporator	coincide with a decrease in the suction line temperature	adversely affect the operation of the system	RA-0018
11	2349	D	Which statement about calibrating a newly installed thermostatic expansion valve is correct?	The procedure requires a refrigeration wrench and a digital thermometer to measure box temperature.	No special tools are required as long as the solid state circuit control panels are functioning properly.	This procedure is done at the factory with tools not available to a mariner.	An accurate thermometer and suction pressure gage are essential to this process.	
11	2350	B	Which of the files listed can be used for sharpening a tool?	A triple cut file.	A single cut file.	Any bastard cut file.	Only a double bastard cut file.	
11	2351	C	A refrigeration system has an evaporator temperature of 40°F and a refrigerant circulation rate of 3.7 lbs/ min/ ton. Using the table shown in the illustration, determine the volume of gas being compressed.	0.79 cubic ft/min/ton	1.97 cubic ft/min/ton	2.93 cubic ft/min/ton	3.70 cubic ft/min/ton	RA-0023
11	2352	C	Which of the listed procedures can be carried out to insure that the modulation valve, shown in the illustration, is opened completely?	The jacking device not shown is utilized to achieve this desired effect when the device appears to be malfunctioning.	When the lift button is depressed the valve is held open due to the action of the indented cam assembly.	The valve may be opened by opening the circuit breaker labeled CB1.	The head of the modulation valve must be removed in order to prevent its residual magnetism from drawing the valve into a closed position.	RA-0020
11	2353	C	When using a hand held hacksaw the correct maximum rate of speed for cutting should be _____.	10 to 20 strokes per minute	80 to 100 strokes per minute	40 to 50 strokes per minute	70 to 80 strokes per minute	
11	2354	A	Routine maintenance on a Central Control Room hermetically sealed air conditioning unit should include _____.	changing the air filter	recharging the system	changing compressor lubricant	renewing container vacuum	

11	2355	A	When a thermostatic expansion valve is installed in a container refrigeration system, the sensing bulb may not require insulation if the bulb is installed _____.	outside of the cooled air stream	in the cooled air stream	on the tail end of the condenser outlet pipe	at the mid-horizontal level of a vertically run tail coil	
11	2356	C	The type of tooth set on a hacksaw blade where every third tooth remains straight, while the other two are alternately set is known as _____.	Alternate	Double alternate	Raker	Wave	
11	2357	B	The valve labeled "5", in the device shown in the illustration is the _____.	pump suction valve	oily water inlet valve	flow control valve	overboard discharge regulating valve	GS-0153
11	2358	B	Which of the following alarms and instrumentation is not required for a vessel incorporating a controllable pitch propeller in its main propulsion system?	Pitch indicator	Low oil temperature	High oil pressure	Low oil pressure	
11	2359	D	Each pressure vessel containing refrigerants, which may be isolated, shall be _____. (46 CFR)	subject to annual hyrdrostatic tests to be performed in the presence of a marine inspector	protected by a relief valve set to relieve at a pressure not exceeding 110 percent of the maximum allowable working pressure of the vessel	stored in an upright position in addition to being secured so as to prevent accidental release of the refrigerant within a confined space	protected by a relief valve set to relieve at a pressure not exceeding the maximum allowable working pressure of the vessel	
11	2360	B	The type of tooth set on a hacksaw blade where two adjoining teeth are staggered to the right, then two to the left, and continue to alternate in this manner is known as _____.	Alternate	Double alternate	Racker	Wave	
11	2361	D	In a typical refrigeration system, the liquid refrigerant in the condenser is 90°F with an evaporator temperature of 40°F. Using the table shown in the illustration, determine the amount of heat absorbed by the liquid flashing to gas.	5.23 BTU/lb	6.67 BTU/lb	7.33 BTU/lb	11.7 BTU/lb	RA-0023

11	2362	A	If the microprocessor shown in the illustration indicates a fault code representing 'Microprocessor Faulty', which of the following conditions is indicated and what corrective action should be taken?	The self checking feature of the microprocessor locates a malfunction due to a circuit or component failure, necessitating the replacement of the microprocessor.	If the unit initiates such an alarm, the unit is obviously functioning correctly and just needs to be reset.	This fault code does not exist and this situation will never occur due to standard manufacturing criteria.	None of the above.	RA-0020
11	2363	D	Expansion valve maintenance should include which of the following procedures?	Cleaning of in-line filters.	Ensuring that the thermal bulb is in good contact with the suction line.	Checking that the thermal bulb is in the proper location.	All of the above.	
11	2364	A	In an air conditioning system, low head pressure associated with a reciprocating compressor can be the result of _____.	broken valve springs	tight drive belts	high line voltage	air in the system	
11	2365	B	Which of the installation steps listed is necessary for the proper operation of the thermostatic expansion valve?	Clean outlet pipe and secure bulb tangential to the flow of refrigerant.	Clean off oxidation from the surface of the suction line and sensing bulb with fine abrasive cloth.	Remove excess lengths of the sensing bulb capillary tube from the device to increase sensitivity.	Heat shrink insulating material around the device once the bulb has been properly secured.	

11	2366	C	Which of the following statements is correct concerning requirements for propellers?	A propeller may not be changed with one of a different pitch unless stress evaluations are supplied and permission is granted by a Marine Surveyor.	When steel propellers are used, zinc anodes are to be fitted on the aftermost strut bearing housing and on the forward most section of the rudder assembly.	The exposed steel of the shaft is to be protected from the action of the water by filling all spaces between the cap, hub and shaft with a suitable material.	Ultrasonic examinations of the propeller may be performed in lieu of required drydocking periods, provided certified copies are distributed to the proper regulatory bodies.	
11	2367	A	When the oily water separator, shown in the illustration, is in operation and processing clear bilge water, what should be the internal water level?	The water level should be located in the upper section of the tank.	The water level should be located in the lower section of the tank as controlled by flow control valve "14".	The water level in the tank should be slightly above the upper coalescer bed "9".	No water level is maintained in the tank.	GS-0153
11	2368	D	Concerning the device shown in the illustration, which of the listed components would be removed or disconnected last during cleaning and inspection of the tank internals?	valves, items "4" and "5"	weir, item "7"	coalescer bed, item "9"	coalescer bed, item "12"	GS-0153
11	2369	B	The differential height of the left hand side of the tube from the zero mark to the open end for device "C" is 4.4". If the barometric pressure is 14.7 psia, and the "U" tube contains mercury, what minimum pressure applied to "A" would just force the liquid out of the tube?	4.32 psia	4.32 psig	29.92 psia	2.16 psig	GS-0154

11	2370	A	Which of the following statements is correct concerning the regulations (46 CFR) regarding internal combustion engine exhausts, boiler and galley uptakes, and similar sources of ignition?	They shall be kept clear of and suitably insulated from any woodwork or other combustible matter.	All exhausts and uptakes shall run as close as possible to the horizontal and shall exit the machinery space at a point above the highest load line.	The general construction of the vessel shall be such as to minimize noise hazards in the upper machinery spaces.	This protection shall be such as to be capable of preventing an excessive temperature rise in the upper machinery spaces.	
11	2371	C	The locking plates shown in the illustration are used in many marine applications. Which figure indicates the improper method for using these devices?	"A"	"B"	"C"	"D"	GS-0156
11	2372	A	The compressor contactor assembly shown in the illustration has burnt out. If all safety devices are operating correctly, which of the following conditions could be a probable cause?	Low line voltage supplied to the system controller.	Twenty amperes of current flowing through relay contact 'K7'.	Steady, continuous running for periods of 12 hours or more.	Excessive refrigerant in system.	RA-0020
11	2373	A	Regarding the device shown in the illustration, what would be the most probable cause if item "1" indicated an unusually high vacuum while the oily water separator was operating in the processing mode?	An unusually high vacuum indicates a restriction in the inlet piping.	An unusually high vacuum is the result of the flow control valve '# 14' being excessively throttled.	An unusually high vacuum is the result of the coalescer beds being installed in reverse order.	This type of oily-water separator always operates with an unusually high vacuum.	GS-0153
11	2374	C	The latent heat of water vapor in air is dependent upon the _____.	dry bulb temperature	wet bulb temperature	dew point	dry point	
11	2375	B	When replacing a thermostatic expansion valve sensing bulb, it is necessary to _____.	apply a light film of oil to increase heat transfer	apply a light film of oil to prevent oxidation	apply a heavy coating of grease to function as a heat sink	carefully coat the device with silicone sealant to reduce the effects of convective cooling	

11	2376	B	You are observing the operation of the oily-water separator shown in the illustration. Item "1" initially indicates a vacuum and a moment later indicates a positive pressure. Which of the following statements describes what has occurred?	The unit has just begun the oily-water mixture processing mode.	The unit has just begun the oil discharge mode.	The unit is obviously flooded and needs to be drained to the proper operating level.	The unit is operating incorrectly and must be secured immediately.	GS-0153
11	2378	D	A hacksaw blade will break if _____.	the rate of cutting is too great	the blade becomes loose in the frame	too much pressure is applied to the blade	all the above	
11	2379	B	Hydraulic hose assemblies are permitted by 46 CFR to be installed between two points of relative motion _____.	provided proper releasing mechanisms are available to enable quick disconnect capabilities	but shall not be subjected to torsional deflection under any conditions of operation	provided the entire length of the device is visible to the operator at all times	to prevent the formation of loading stresses	
11	2380	B	If air is continuously allowed to enter the device shown in the illustration while operating in the processing mode _____.	the air will accumulate in the top of the unit and will be manually vented off using valve "2"	the accumulation of air in the top of the unit will be sensed as oil by item "6" and initiates the oil discharge mode	the air will present no problem to the operation of the unit, it is entrained with the treated water and is pumped overboard	the unit will prevent this as the associated pump is normally controlled with a level control device	GS-0153
11	2381	D	What is the primary function of the devices shown in the illustration?	The transit washers transmit the rotary motion of the cap screw to the actuating assembly.	These abrasion resistors prevent damage to the surface around the bolt holes when tightening the bolts.	The grounding straps help prevent electrolysis by improving the conductivity between the components.	The locking plates are used to prevent the fastening devices from vibrating loose.	GS-0156

11	2382	C	The refrigeration system shown in the illustration utilizes a modulation valve, providing suction modulation capacity control, and produces some distinctive operating characteristics. Which of the following statements represents the peculiarities encountered when operating this system?	The operation of the valve will always cause compressor crankcase frosting, giving the impression of heat loss and operational inefficiencies.	The discharge pressure will moderate according to the relative movement of the modulation valve to limit excessive head pressure.	Suction and discharge pressures may drop below expected normal readings when the unit is in the power limit or modulating cool mode.	As the modulation valve closes, the contacts at PCC close, reducing the speed of the compressor and increasing the overall operating efficiency of the unit.	RA-0020
11	2383	C	The vessel has received a refrigerated container loaded with 9 long tons of ice cream. The current box temperature is 31°F but has a normal set point of minus 10°F. Under ideal conditions how long will it take to pull the box temperature down to set point, if the equipment is operating properly? Specific heat of the cargo equals 0.39 BTU/LB/°F, with a container heat gain of 6,000 BTU/hr, and a refrigeration system capacity of 3.5 tons.	6 hours 48 minutes	7 hours 58 minutes	8 hours 57 minutes	9 hours 38 minutes	
11	2384	C	Rather than design an infinite variety of valve sizes for use as thermostatic expansion valves, some manufacturers use _____.	an adjusting cap to meet the various size differences	a flexible diaphragm	internal restrictors of different sizes	a feeler bulb with an adjustable pressure line	
11	2385	C	Which of the following statements represents the last step to be followed when replacing the power element of the device shown in the illustration?	Replace all removed shrouding.	Calibrate the sensing bulb.	Measure evaporator tail coil superheat.	Remove all excess capillary tubing.	RA-0007

11	2386	D	The ball float shown in the illustration has a circumference of 18.85" and is used in water with a specific gravity of 1.0. If 16 pounds of force is available at "X", and the effective length of the float arm is 24 inches, what is the length of "L"?	2.00 inches	2.50 inches	2.75 inches	3.00 inches	GS-0158
11	2387	B	The device shown in the illustration is a _____.	relief valve	flushometer valve	hydro-kineter	back pressure regulator	GS-0155
11	2388	C	The device shown in the illustration is used to _____.	maintain proper sanitary system operating pressure	provide pressure relief in low pressure systems	control flush water flow to toilets and urinals	inject emergency feed water into high pressure vessels	GS-0155
11	2390	D	The diaphram orifice labeled "H", as shown in the illustration is used as a/an _____.	pressure reducer	check valve	injector	time delay	GS-0155
11	2391	D	Which figure shown in the illustration, is the nut lock improperly used?	"A"	"B"	"C" and "D"	"C" and "E"	GS-0156
11	2392	C	As shown in the illustration, the gage labeled "C" contains mercury and both devices "B" and "D" indicate 'zero' units when exposed to atmospheric pressure. If the pressure indicated on "A" is 16.2 psia, the corresponding readings of the gages "B", and "D", and the height "H" for device "C" should be _____.	B = 2.1 psig, D = 450" H2O, h = 3"	B = 40.9 psig, D = 450" H2O, h = 3"	B = 1.5 psig, D = 41.59" H2O, h = 3"	B = 2.1 psig, D = 42" H2O, h = 6"	GS-0154
11	2394	D	Constant superheat is maintained at the evaporator outlet of a refrigeration coil by a _____.	solenoid valve	low pressure cutout switch	king valve	thermal expansion valve	
11	2396	D	Water flow is established through the unit shown in the illustration when _____.	"E" is moved from the position shown	"A" is tilted off of its seat	total force above "C" is reduced below the value of the total force acting beneath "C"	all of the above	GS-0155

11	2397	A	Which of the following statements is correct concerning the operation of the device shown in the illustration?	The tilting of "A" from its seat releases the pressure from above "C".	Only by releasing "E" will the unit be able to shut itself off.	For the unit to be activated, "A" can only be moved initially in line with the axis of the unit.	The movement of "E" will directly push "D" in a smooth vertical motion.	GS-0155
11	2398	C	Edges on objects not visible in the view shown are represented in blueprints by _____.	a thick solid line	dashed line having alternating long and short dashes	dashed lines having approxiamately equal length dashes	Hidden edges are not represented because they are 'hidden'.	
11	2399	C	If water continues to flow excessively from the device shown in the illustration, the problem is most likely due to _____.	"E" being stuck or held in a position other than indicated in the illustration	a hole being formed in the outboard edge of "C"	item "H" being fouled or plugged	a hole developing in "B"	GS-0155
11	2400	D	If water continues to trickle into the toilet bowl after the device shown in the illustration has apparently closed, the problem is likely due to _____.	"E" being stuck or held in a position other horizontal	a problem with "H" that allows continuous low flow across the device	"A" being cocked into a fully open position	"C" having developed a warp or ripple at the seating surface	GS-0155
11	2401	D	When should the nut lock shown in the illustration, be replaced with standard lock washers or other similar devices used in the industry?	Flat locks are no longer used in the marine industry and should be replaced during the next maintenance procedure.	When torque values of 25 foot pounds or greater are being used, replacement with spring washers is mandatory.	Bellvue washers are the ideal substitute for these locking devices provided a thread locking adhesive is used.	Replacement with another nut locking device is unnecessary.	GS-0156
11	2402	A	The pressure applied to the instruments via port "A", as shown in the illustration, is 16 psia. What will be the equivalent pressure readings for "B" and "D"?	B = 1.3 psig D = 36 inches of H2O	B = 16 psig D = 63 inches of H2O	B = 17.4 psig D = 42 inches of H2O	B = 14.7 psig D = 32 inches of H2O	GS-0154

11	2404	B	If a refrigeration system is overcharged with refrigerant, one result will be _____.	low suction pressure	higher than normal compressor head pressure	increased system operating efficiency	short cycling on the low pressure cutout	
11	2405	A	Which of the listed statements describes the method used to determine the amount of superheat to be developed in the evaporator coil?	Note the evaporator pressure, determine corresponding saturation temperature, and subtract it from the temperature measured at the thermostatic expansion valve sensing bulb.	Determine the suction/ discharge temperature differential and multiply by the constant of .0967.	Multiply the travel of the expansion valve stem by the conversion factor.	Subtract the temperature of the gas after the unit has been pumped down from its operating temperature as determined by the evaporator test gage during normal operation.	RA-0016
11	2406	D	During the operation of a five box refrigeration system, using a fixed capacity compressor, two additional boxes came on line with the two boxes already in the active cooling process. At the beginning of the cooling period for the two additional boxes, the operating conditions of the system would require the quantity (flow rate) of refrigerant to the compressor suction to _____.	remain the same, with a decrease in suction pressure	increase, while maintaining the previous suction pressure	remain the same with an increase in suction pressure	increase, with an increase in suction pressure	
11	2407	A	The device shown in the illustration is used as a/an _____.	refrigeration compressor capacity unloading mechanism	air conditioning proportional-plus-reset, humidity/ temperature ratio controller	multi-box back pressure regulator with accumulator	combined box temperature thermostat and thermal expansion device	RA-0013
11	2408	B	The compressor crankcase (suction pressure) is sensed through the port in the illustration labeled as _____.	D	B	X	J	RA-0013

11	2409	A	A liquid is being transferred by a centrifugal pump. As the liquid passes through the volute, its velocity decreases and _____.	its pressure increases	its pressure decreases	the potential energy decreases	the kinetic energy increases	
11	2410	A	The watch engineer finds the cargo refrigeration compressor has blown the shaft seal. In this situation, he should _____.	secure the compressor at once and close the suction and discharge valves	pump the system down and isolate the leak	close the suction valve, secure the compressor, and then replace the shaft seal	tighten the shaft seal packing to reduce leakage, slow the compressor, and operate the expansion valves by hand until repairs can be made	
11	2411	C	It is necessary to replace a branch suction section of bilge system piping within the machinery space. The machinery space is 100' in length and 85' in breadth. The molded depth of the bulkhead deck is 25'. Which of the listed pipe sizes should be used?	2" (nominal size) schedule 40	3" (nominal size) schedule 80	4" (nominal size) schedule 80	5" (nominal size) schedule 60	
11	2412	B	If "A" were open to the atmosphere, as shown in the illustration, the pressure gage would read zero and the levels in the "U" tube would be equalized. If "D" is manufactured to indicate inches of water, what will be indicated reading of the diaphragm gage if the atmospheric pressure is 14.7 psia?	D = 407.6 inches of water	D = 0.0 inches of water	D = 14.76 inches of water	D = 27.73 inches of water	GS-0154
11	2413	A	Protective equipment to be used while carrying out oxyacetylene welding should always include _____.	goggles	ear plugs	non-sparking tools	steel toe safety shoes	

11	2414	B	When the refrigeration system compressor suction pressure corresponds to an elevation in coil temperature, a low pressure cutout switch is set to automatically start the compressor. The normal stopping point of the compressor is set by adjusting the _____.	cut-in point of the low pressure cutout switch	low pressure cutout switch differential	cutout point of the high pressure cutout switch	high pressure cutout switch differential	
11	2415	B	Which of the following statements represents the information obtained by the indication on the gage shown in the illustration?	The absolute pressure of the refrigerant corresponding to the saturation temperature.	The corresponding saturation temperature of the refrigerant to the indicated gage pressure.	The pressure of the refrigerant and the corresponding superheat temperature.	The indicated pressure of the refrigerant and the saturation temperature of water.	RA-0016
11	2416	A	In an emergency, the electro-hydraulic steering units can be directly controlled by the _____.	trick wheel	rapson slide	follow-up gear	receiver unit	
11	2417	B	Which nondestructive testing method is suitable for use in detecting and identifying a diameter subsurface void in a six inch diameter stainless steel shaft?	Magnetic particle	Radiography	Ultrasonic	Dye penetrant	
11	2418	B	One function of the thermal expansion valve is to _____.	act as a pilot from the solenoid valve	regulate the amount of refrigerant flow to the coil	regulate the water flow	turn the compressor off and on	
11	2419	C	The safety heads of most large reciprocating compressors used in refrigeration systems are held in place by _____.	discharge pressure in the safety return line	large teflon gaskets	heavy coil springs	tack welding on the sides	
11	2420	C	The device shown in the illustration is a _____.	ball check valve	lift check valve	swing check valve	piston check valve	GS-0056
11	2421	C	If it is necessary to replace a section of bilge piping passing through a fuel oil double bottom tank not using a pipe tunnel, what schedule of pipe should be used?	Schedule 40	Schedule 60	Schedule 80	Schedule 160	

11	2422	B	Dry bulk material transfer to an offshore drilling rig has just begun when you discover air leaks at the P-tank manhole cover. You must _____.	complete the discharge before attempting any repairs	de-pressurize the tank, inspect, clean and reseat the gasket	reduce the P-tank pressure to 25-30 psi to complete the transfer	place a burlap bag around the leaking manhole flange	
11	2423	C	Regarding the hrdraulic transmission illustrated, the "A" end is a _____.	variable stroke motor	fixed displacement pump	variable stroke pump	fixed displacement motor	GS-0057
11	2424	C	The presence of gas in the liquid line is undesirable and can be eliminated by _____.	increasing the distance between the evaporator and condenser	using a larger expansion valve	subcooling the liquid	installing the evaporator at a higher level than the condenser	
11	2425	C	The coil temperature measured at the expansion valve sensing bulb of an operating system is 33°F. The coil pressure gage, similar to the device shown in the illustration, indicates 25 psig. What adjustments or changes, if any, should be made to the system?	The filter drier needs to be changed to increase the suction pressure.	The evaporator coils need to be steam cleaned or high pressure washed.	The expansion valve should not be adjusted, as the degree of superheat is within the accepted range.	The liquid line strainer is obviously fouled and needs to be cleaned.	RA-0016
11	2426	D	If the valve "A" on the pump illustrated is closed, the _____.	packing will tend to wear rapidly	pump may loose suction if the suction is from below the pump	shaft sleeve may become excessively worn	All of the above.	GS-0070
11	2427	C	In hydraulics, the graphic symbol illustrated in Fig. A is used to represent a/an _____.	variable resistor	expansion joint	spring	flexible mount	GS-0068
11	2428	D	What is the reading of the vernier micrometer caliper scale shown in figure "A" in the illustration?	0.8158 inch	0.8228 inch	0.8358 inch	0.8388 inch	GS-0091
11	2429	A	The reading indicated on a vernier micrometer caliper scale is .8388 inches. Which of the figures illustrated represents this reading?	Figure A	Figure C	Figure D	Figure F	GS-0091
11	2430	C	While cleaning out a P-tank _____.	provide a gas mask when using petroleum based solvents for cleaning	standard tank safety precautions are unnecessary if the manway hatch is off	provide properly grounded and electrically safe portable lighting	use a combustible gas indicator when working in the tank	

11	2432	D	A pressure gage, similar to device "D" shown in the illustration, is installed on the vessel's ventilation system. The gage is indicating 30 inches of water (7.465 kPa), but the accuracy of the gage is in doubt. Using a piece of clear hose, you construct a simple U tube mercury manometer, similar to device "C" illustrated. Once installed, the distance between the levels is 12.7 centimeters. How inaccurate is the existing draft gage?	The gage reads slightly lower, but the inaccuracy is too insignificant to be concerned.	The draft gage is correct when acknowledging the effects of absolute pressure on the system.	The existing draft gage indicates a pressure equal to atmospheric pressure.	The mechanical draft gage is indicating an error incorrect by 55 percent of the true measured value.	GS-0154
11	2433	D	In the illustrated device, what is the function of the short sensing element attached to "S" in figure "A"?	It senses temperature for use in the temperature control circuit.	It is used to maintain liquid level one inch below the wier plate.	Both sensing elements are anodes used to provide the tank with corrosion protection.	It is used to control the oil discharge mode.	GS-0113
11	2434	C	At ambient temperature and atmospheric pressure, R-12 is a/an _____.	corrosive liquid	flammable gas	odorless gas	superheated liquid	
11	2435	D	Which of the following statements represents the condition where the numerical value of the evaporator superheat will be greater than the associated box temperature being cooled?	The amount of superheat will always be greater during transient load conditions.	This condition will exist if the suction pressure should become greater than the coil pressure.	The corresponding saturation temperature of the refrigerant being used will prevent this situation from happening.	This situation will occur in a box being maintained at or near the 0°F setpoint temperature.	
11	2436	A	The reading indicated on a vernier micrometer caliper scale is .2928 inches. Which of the figures in the illustration represents this reading?	Figure B	Figure C	Figure E	Figure F	GS-0091
11	2437	D	The reading on the micrometer scale shown in figure "II" in the illustration is _____.	0.321 inch	0.350 inch	0.351 inch	0.371 inch	GS-0095
11	2438	B	What is the reading of the vernier caliper scale shown in figure "F" in the illustration?	1.719 inch	1.723 inch	1.812 inch	1.871 inch	GS-0092

11	2439	C	Which of the ilustrated figures represents the use of a right hand roughing tool?	Figure P	Figure S	Figure T	Figure V	GS-0090
11	2440	D	Which chemical symbol represents ammonia?	AM3	AMn3	NM3	NH3	
11	2441	D	If a vessel is not provided with duplicate service systems, which of the systems listed will satisfy the regulations if serviced by two pumps? (46 CFR)	Main condensate	Fuel oil service	Lube oil service	All of the above	
11	2442	A	Determine the values of "A", "B", and "C" in the table accompanying the chart shown in the illustration.	A = 71.2°F, B = 62.5°F, C = 35.0 BTU/lb	A = 90.0°F, B = 62.5°F, C = 27.0 BTU/lb	A = 40.0°F, B = 71.2°F, C = 35.0 BTU/lb	A = 72.1°F, B = 65.2°F, C = 37.0 BTU/lb	RA-0021
11	2443	A	A centrifugal pump gradually develops insufficient discharge pressure. What corrective action is required?	Replace the wearing rings.	Throttle in on the discharge valve.	Replace the lantern rings.	Throttle in on the suction valve.	
11	2444	B	The low pressure cutout switch will cause the compressor in a refrigeration system to short cycle if the _____.	expansion valve thermal bulb loses its charge	differential pressure between the cut-in pressure and cutout pressure is too small	expansion valve freezes in the closed position	refrigerant has too much oil in circulation	
11	2445	A	If the "B" end of the hydraulic transmission illustrated, were provided with a variable position tilting box, and the 'A: end displacement were to be constant, the _____.	speed output of the "B" end would increase in proportion as the tilting box angle would approach zero	available horsepower at the "B" end would increase in proportion as the tilting box angle would approach zero stroke	speed output of the "B" end would increase in proportion to increasing the "B" end tilting box angle	available horsepower at the "B" end would increase in proportion to decreasing the angle of the "B" end tilting box towards zero	GS-0057
11	2446	A	Which piping material is recommended to be used in extra heavy duty sizes in ammonia refrigeration system construction?	Steel	Monel	Bronze	Copper	

11	2447	D	When cleaning out a P-tank _____.	it will be necessary to use approved petroleum base solvents and a gas mask	a combustible gas indicator must be in use during the cleaning process	standard tank safety precautions are not necessary when the manway is open to provide light and ventilation	provide a safety harness that permits an unconcious person to be pulled out through the manway	
11	2448	B	What is the reading of the vernier caliper scale shown in figure "B" in the illustration?	3.7850 inch	5.3700 inch	5.8050 inch	6.3700 inch	GS-0092
11	2449	C	If your skin comes in contact with liquid ammonia refrigerant, you should immediately _____.	contact physicians health care	apply an antibacterial ointment	flush the affected area with water	remove all necessary clothing	
11	2451	C	It is necessary to test the hydraulic system of a controllable pitch propeller. According to 46 CFR what should be done?	The vessel must be drydocked and the propeller removed when performing this test.	The system pressure should be prevented from exceeding the maximum allowable operating pressure set forth by the manufacturer.	The system should be tested at a pressure of 1 1/2 times the maximum allowable pressure.	All necessary repairs must approved by the Chief Engineer of the vessel.	
11	2452	C	Using the information given, solve for "H", "I", and "J" in the table accompanying the psychrometric chart shown in the illustration.	H = 33.0 BTU/lb, I = 15.5 cubic ft/lb, J = .0127 lbs/lb	H = 33.0 BTU/lb, I = 13.97 cubic ft/lb, J = 78.0 grains/lb	H = 34.1 BTU/lb, I = 13.97 cubic ft/lb, J = 88.0 grains/lb	H = 34.1 BTU/lb, I = 14.97 cubic ft./lb, J = 98.0 grains/lb	RA-0021
11	2453	C	Which materials should be used for ammonia refrigeration system evaporator cooling coil construction?	Copper tubing with copper fins	Copper tubing with aluminum fins	Aluminum tubing with copper fins	All of the above may be used.	
11	2454	D	When checking the oil level in a refrigeration compressor, the most accurate reading is obtained _____.	immediately after purging	immediately after charging	after being secured for 3 hours with the sump heater secured	immediately after shutdown following a prolonged period of operation	

11	2455	B	If an evaporator or condenser coil of a container refrigeration system becomes dirty and requires cleaning, one of the suggested methods is to use the _____.	'Binks' gun with weak acid solvent	pressure wash or a steam cleaning system	copper wire rotary brush	all of the above	
11	2456	D	Ammonia is lighter than air and if a leak should occur its concentration will be _____.	lower near the top of an enclosed space	dependent upon available free hydrogen ions	of minimum importance during venting procedures	lower near the deck of an enclosed space	
11	2457	A	When cleaning a P-tank _____.	wear a dust mask to filter out mud and cement particles	only use approved petroleum based solvents	it is not required to use standard tank safety procedures	an explosimeter must be provided to test the tank atmosphere	
11	2458	B	The illustrated device is used to _____.	force a uniformly heated sample of oil by applied pressure, through the bottom orifice with in a specified time	allow a uniformly heated 60 c.c. sample of oil to gravitate through the bottom orifice, using the time as a measurement viscosity	determine the temperature at which vapors are produced, ignited, and extinguished	measure the volatility of an oil sample, by determining the resulting pressure as the volume of vapor is continually increased	GS-0069
11	2459	D	The pressure in a high pressure refrigeration system about to be opened for repair should be _____.	1 to 2 psig	4 to 7 psig	11 to 12 psig	0 psia	
11	2462	D	The relative humidity is 90% and the dry bulb temperature is 50°F. Using the information shown in the illustration, determine the difference between the dew point and wet bulb temperature.	19.50°F	12.50°F	4.90°F	1.50°F	RA-0021
11	2463	D	The unit shown in the illustration has just been internally cleaned. An inspection was carried out and the unit found to be properly lined up, although item "1" indicates an unusually high vacuum. Your next step should be to _____.	retighten all the capscrews on the lid	reseat the relief valve, item "2"	close off control valve, item "14"	check the bilge water inlet strainer	GS-0153

11	2464	C	The temperature in a refrigerated space is controlled by adjusting the thermostat connected to the _____.	suction line solenoid	thermostatic expansion valve	liquid line box solenoid	low pressure cutout switch	
11	2465	C	Standard driers used in many container type refrigeration systems may contain _____.	activated charcoal or silica gel	special chemicals to increase adsorbtion rates	activated alumina or silica gel	all of the above may be used	
11	2466	C	If the temperature of the ammonia gas in the discharge piping and the condenser of a refrigeration system remains above 266°F, the _____.	refrigeration effect increases	unit will begin to subcool	vapor will cease to condense	process of sublimation will begin	
11	2467	B	The flame of a sulphur candle in the presence of an ammonia leak will turn _____.	pink	white	yellow	blue	
11	2468	B	When manually cleaning a P-tank _____.	the worker must be provided with an OBA	have a person standing by on deck	a short length of rope should be worn around the waist to pull the worker to safety	an explosimeter must be provided to test the tank atmosphere	
11	2469	C	The type of welded joint illustrated is referred to as a/an _____.	socket weld	edge weld	butt weld	annulus weld	GS-0078
11	2471	B	According to Coast Guard Regulations (46 CFR) an accumulator is a/an _____.	device in which bilge water may be stored prior to being pumped ashore	unfired pressure vessel in which energy is stored under high pressure in the form of a gas or a gas and a hydraulic fluid.	industry accepted term for the equipment which is used to collect oily bilge liquids	test procedure in which the relieving capacity of the safety valves are verified	

11	2472	B	Sample #5 in the table shown in the illustration indicates a relative humidity of 90%. Using the accompanying psychrometric chart, determine which of the samples contains the greatest amount of moisture per pound of dry air.	Sample 1	Sample 2	Sample 3	None of the above are correct, as it is contradictory to measure moisture on a weight per pound of 'dry' air basis.	RA-0021
11	2473	A	Which of the following devices is the safest to use when locating ammonia leaks?	Litmus paper	Sulphur candle	Halide torch	All of the above are recommended.	
11	2474	B	The water regulating valve installed in a refrigeration system is operated by the _____.	compressor discharge temperature	compressor discharge pressure	solenoid	sensing line from the tail coil	
11	2476	B	Which of the following refrigerants will normally require water cooled compressor components?	R-134	Ammonia	R-22	All of the above are correct.	
11	2477	A	The receiver used in a refrigeration system _____.	stores liquid refrigerant	collects noncondensable gases	allows refrigerant to be subcooled	prevents liquid refrigerant from slugging to the compressor	
11	2478	D	Theoretically, if the "B" end of the hydraulic transmission illustrated were provided with a variable position tilting box, and the "A" end displacement were to be constant, the _____.	speed output of the "B" end would decrease in proportion as the tilting box would approach zero stroke	available horsepower at the "B" end would increase in proportion as the tilting box would approach zero stroke	speed output of the "B" would increase in proportion to increasing the "B" end tilting box angle	available horsepower at the "B" end would increase in proportion to the increasing angle of the "B" end tilt box angle	GS-0057
11	2479	C	What would occur if "A" shown on the illustrated pump is closed?	Recirculation will not be available at low flow.	Satisfactory venting of the pump casing would not be possible.	The interval of replacing the packing will become more frequent.	All of the above.	GS-0070
11	2480	D	Average condensing pressures of an ammonia refrigeration system range between _____.	120 and 160 psig	130 and 170 psig	140 and 180 psig	150 and 190 psig	

11	2481	D	Bilge lines led through tanks, without using a pipe tunnel must be _____.	of schedule 40 pipe	fitted with return valves at the bilge manifolds	coated with coal tar epoxy, or similar corrosion resistant substance	fitted with nonreturn valves at the bilge suctions	
11	2482	D	Using the psychrometric chart, which of the air samples listed below has the identical specific volume to an air sample having a dry bulb temperature of 70°F, and a moisture content of 11 grains per pound of dry air?	Dry bulb 72°F, Dew point 33.5°F.	Dry bulb 63.0°F, Relative humidity 60%.	Dry bulb 69.0°F, Heat content 23.25 BTU/lb.	Dry bulb 63.4°F, Wet bulb 59.5°F.	RA-0021
11	2483	D	An ammonia leak will turn moistened pink litmus paper _____.	orange	red	purple	blue	
11	2484	D	The thermal expansion valve reacts directly to the _____.	temperature in the space being cooled	liquid refrigerant pressure at the solenoid valve	pressure drop across the evaporator coils	temperature of the evaporator coil outlet	
11	2486	A	Under normal conditions ammonia refrigerants should be added at the _____.	high side of the system	suction service connection	discharge service connection	expansion valve sideport connection	
11	2488	B	To service a 60 ton air conditioning package, the easiest way to determine the type of refrigerant used is to _____.	use your service gage set and refrigeration card	look at the unit name plate	ask the Chief Engineer	look on the top of the TXV	
11	2489	C	If a block and tackle arrangement were rigged as shown in figure "D" in the illustration, the amount of force "P" required to hold the 225 pound load stationary would be _____.	34 lbs.	45 lbs.	75 lbs.	90 lbs.	GS-0110
11	2490	C	Pure anhydrous ammonia is considered noncorrosive to _____.	iron only	steel only	copper-bearing metals	None of the above are correct.	
11	2491	D	If auxiliary machinery vital to the main propulsion system is not provided with independent duplicate systems, which of the systems listed would satisfy regulations if serviced by two pumps? (46 CFR)	Main condensate	Lube oil service	Fuel oil service	All of the above	

11	2492	D	The introduction of outside air to the air conditioning system is 90°F with a relative humidity of 60%. The air has been conditioned to 56°F with a relative humidity of 80%. Using the psychrometric chart, shown in the illustration, determine the quantity of moisture removed from one pound of the conditioned air.	44 grains	54 grains	64 grains	74 grains	RA-0021
11	2493	B	When used as a refrigerant, ammonia containing moisture will act as a corrosive mixture to _____.	steel components	brass and bronze metals	stainless steel components	All of the above are correct.	
11	2494	C	When hot gas defrosting a refrigeration system, one way to overcome the possibility of a large slug of liquid refrigerant entering the compressor suction is to use the installed _____.	subcooler	liquid extractors	re-evaporator	drain lines	
11	2495	B	If the combination moisture indicator and sight glass indicates an accumulation of moisture within the system, which of the listed procedures would be the most practical to follow?	Secure the system, disassemble and de-ice the thermostatic expansion valve.	Close the king valve, pump down the system, isolate the drier, remove and replace with new drier element.	Purge the entire system to the atmosphere, replace the drier, and add freon.	Using a vacuum pump, draw the system down to 1,270 microns for a period of three hours.	
11	2496	C	While the illustrated oily-water separator is operating in the processing mode, if item "1" indicates higher than normal absolute pressure, what is the probable cause?	The bilge suction is completely flooded.	The flow control valve "14" is completely open.	The coalescer beads are severely fouled.	There is minor air leakage from the pump discharge.	GS-0153
11	2497	D	Which of the listed valves should be closed when adding ammonia to a refrigeration system?	Master valve	Suction service	Discharge service	King valve	
11	2498	B	Which refrigeration system will require the use of an oil trap?	Brine	Ammonia	Methyl Chloride	All of the above.	
11	2499	B	The distillate pump for a 10000 GPD evaporator, should be rated at a minimum of _____.	5.9 gpm	6.9 gpm	208.3 gpm	416.7 gpm	

11	2500	B	Axial thrust of the pump shaft illustrated is compensated for by the use of _____.	a balancing piston	equalizing holes in the impeller	tapered needle thrust bearings	shaft lantern rings	GS-0070
11	2501	D	For most refrigeration split systems that use one sight glass, a good location for the sight glass is just _____.	before the compressor suction line	after the compressor discharge	upstream of the condenser	upstream of the liquid metering device	
11	2502	D	A machinery space supply fan is delivering 5000 cubic feet of air per minute. The temperature of the air is 71°F, with a relative humidity of 38%. How many pounds of air are delivered to the space in a 24 hour period?	22,222.22 lbs/day	67,500.00 lbs/day	432,000.00 lbs/day	533,333.33 lbs/day	RA-0021
11	2503	A	The best method in assisting the proper alignment and welding of the flange and pipe shown in the illustration is to _____.	insert a temporary sleeve into the pipe for alignment	tack weld flat iron straps from the flange to the pipe to complete the fabrication	slip a temporary sleeve around the pipe	stand the flange on end vertically position the pipe on the flange, tack weld, then lay flat to complete the fabrication	GS-0078
11	2504	C	A flapper valve, also known as a beam valve, is frequently used in refrigeration compressor discharge valves, and is designed to _____.	feed discharge pressure to the suction line	aid in hot gas defrosting	pass liquid slugs	equalize system pressure for compressor cycling	
11	2505	A	What is the reading of the vernier caliper scale shown in figure "C" in the illustration?	3.3750 inch	3.3500 inch	3.4750 inch	4.3750 inch	GS-0092
11	2507	B	In the illustration shown, the letters "UNC" used in the notation "1/4-20 UNC-2" indicates the _____.	thread profile	thread series	class of finish	class of fit	GS-0037
11	2508	A	Oil is returned to the illustrated radial piston hydraulic pump piston(s) numbered as _____.	1	2	3	2 and 3	GS-0059
11	2509	B	Refrigerant recovery equipment that is considered as being system dependent _____.	must have its own power source	recovers refrigerant with the aid of components in the system	are portable units	can only recover liquid refrigerant	

11	2510	C	If a block and tackle arrangement were rigged as shown in figure "D" in the illustration, the amount of force "P" required to hold the 233 pound load stationary would be _____.	35 lbs.	47 lbs.	78 lbs.	93 lbs.	GS-0110
11	2511	A	A P-tank system, as used on oilfield supply boats _____.	must be kept free of moisture and water	is designed to transfer viscous liquids	is capable of pumping chunks of cement that find their way into the system	answers B and C above	
11	2512	A	The preconditioned air temperature is 90°F with a relative humidity of 66%. After the air has been conditioned, its temperature has been reduced to 60°F and is saturated. Using the psychrometric chart shown in the illustration, calculate the number of grains of moisture removed from one pound of the air.	62.00 grains	78.00 grains	140.0 grains	218.0 grains	RA-0021
11	2513	D	Which of the situations listed can cause item "1" to indicate a low vacuum while the oily-water separator, shown in the illustration, is operating in the processing mode?	This type of oily-water separator always operates with a low vacuum, and is never adversely effects the separation process.	A low vacuum will only exist when the inlet valve "5" is fully opened.	A low vacuum will only exist when the oil discharge valve "4" is fully opened.	A low vacuum may be caused by the improper setting of the flow control valve, item "14".	GS-0153
11	2514	A	The suction pressure switch controlling the refrigeration compressor operation is actuated by _____.	pressure acting on a bellows	temperature acting on a bellows	temperature acting on a thermal element	pressure acting on compressor suction valves	

11	2515	D	What function is provided by the holes located at the bottom of the loop within the item "20" shown in the illustration?	The holes permit draining of the loop when the unit is secured.	The holes are not holes at all, but rather an indication of gas bubbles flowing through the system.	The holes are provided to allow for any expansion of ice which may form when the unit is secured.	The holes aid in the return of the refrigeration oil to the compressor.	RA-0018
11	2516	C	Which of the listed illustrated figures represents the correct use of a lathe threading tool?	Figures L/P	Figures L/U	Figures V/L	Figures V/P	GS-0090
11	2517	C	Refrigerant entering the compressor of a refrigeration system should be in which of the following conditions?	Sub-cooled liquid	Sub-cooled vapor	Superheated vapor	Liquid	
11	2519	A	The petcock "B" installed on the illustrated pump is used to _____.	vent the casing at start-up	supply sealing water to the stuffing box	provide recirculation at low flow	provide a sensing signal to control the pump discharge rate	GS-0070
11	2520	D	Inhalation of high concentrations of CFCs may have which of the following effects?	drowsiness	loss of concentration	cardiac arrhythmia's	all of the above	
11	2521	C	The chemical formula for ozone is represented as _____.	O	O2	O3	Oz	
11	2522	C	Using the psychrometric chart shown in the illustration, determine the quantity of heat removed from one pound of air as it is cooled from 85°F at 80% relative humidity to 57°F at 70% relative humidity?	12.2 BTU	17.2 BTU	22.5 BTU	64.9 BTU	RA-0021
11	2523	C	The device illustrated is used as a _____.	refrigeration system packless valve	quick closing valve	pressure reducing valve	high pressure diesel engine air start valve	GS-0054
11	2524	D	R-12 has been a suitable refrigerant for use in high temperature applications with _____.	reciprocating compressors	rotary compressors	centrifugal compressors	all of the above	

11	2525	A	What is the function of the device shown in the illustration?	The device determines whether the unit will be in the cooling, or heating and defrost modes of operation.	The device is used to ensure that all returns go to the compressor discharge.	The device is used to provide flow through the pilot solenoid.	The device is utilized to reduce the amount of blowback occurring in the condenser due to propagated wave fronts.	RA-0017
11	2527	B	The function of the device illustrated is to _____.	control steam input to a heat exchanger	control condensate output from a heat exchanger	provide on/off control of drain pump	provide air purging of low pressure refrigeration or air conditioning systems	GS-0048
11	2528	C	When taking readings at the suction service valve of an operating refrigeration compressor _____.	the pressure, or temperature reading is only required, as the refrigerant is saturated	the pressure and temperature reading is required as the refrigerant is probably subcooled	the pressure and temperature reading is required as the refrigerant is superheated	the readings at this location must always be recorded as pressure absolute and degrees centigrade	
11	2529	C	Refrigerant leaving the metering device in a refrigeraton system is a _____.	sub-cooled liquid	sub-cooled vapor	saturated liquid/vapor mixture	saturated liquid	
11	2531	C	Operating pressure on a P-tank system should be _____.	the same pressure required for repressurization and cleaning the system	a constantly maintained range of 15 to 18 psi	slightly below the pilot unloading valve setting	slightly below the safety valve setting	

11	2532	D	The quarters steam heating system warms the outside air from 30°F at 80% relative humidity to 105°F. Additional humidification is not provided and the air feels very dry. Using the psychrometric chart, determine the amount of heat added to each pound of air and its approximate relative humidity after being heated.	28.7 BTU, 26% relative humidity	14.8 BTU, 6% relative humidity	10.3 BTU, 16% relative humidity	18.4 BTU, 6% relative Humidity	RA-0021
11	2533	C	If you know that a refrigeration system is leaking refrigerant, you would first _____.	recover the refrigerant	charge the system	look for traces of oil	evacuate the system	
11	2534	D	Which of the devices listed will indicate the proper operation of a refrigeration system dryer?	Dryer sensing bulb	Mcleod gage	Particulate test	Moisture indicator	
11	2535	B	The pilot solenoid valve used in conjunction with item #5 shown in the illustration is _____.	in the open position when the unit is in the heating mode and the solenoid is de-energized	a normally closed valve when the unit is in the cooling mode and the solenoid is de-energized	energized only during the defrost mode	normally open if the unit is in the defrost and heating mode and the solenoid is de-energized	RA-0018
11	2536	B	What will cause the throughput of the oily-water separator shown in the illustration to decrease when operating in the processing mode?	The flow control valve "14" is open excessively wide and permitting an excessive amount of bilge water to enter the separator, resulting in an overload.	A decrease in the processing ability may be caused by a worn pump internals.	The throughput of the separator may be reduced if the inlet valve "4" remains open during processing mode.	The throughput of the separator varies while in the processing mode as determined by the quantity of oil in the emulsion.	GS-0153
11	2537	D	Which of the following base oils cannot be refined without developing a change in chemical composition?	animal	vegetable	mineral	both A and B	

11	2538	A	The function of the illustrated device is to _____.	relieve compressed air from the intercooler after the compressor has cycled off	relieve compressed air directly from the low pressure cyllinder after the compressor has cycled off	provide variable discharge air flow to the compressed air system depending on the load on the system	direct compressed air from the air receiver directly to the low pressure cyclinder unloading device	GS-0034
11	2539	A	Which recovery phase will reduce the loss of oil during the recovery of refrigerants from small appliances such as a water cooler?	vapor recovery	liquid recovery	inital recovery	vapor-liquid recovery	
11	2540	B	The device illustrated would be best used as a _____.	variable capacity pump	variable or constant speed motor	power take-off driven lube oil pump	hydraulic hatch supply pump	GS-0058
11	2541	C	Large quantities of halogenated floro-carbons when released from refrigeration systems, will contribute to ozone depletion in the _____.	bathosphere	ionosphere	stratosphere	troposphere	
11	2542	B	If the "B" end were driven by an electric motor and the "A" end were disconnected from the line terminals of the motor controller, the unit illustrated could then be used as a _____.	mooring winch	variable ouptut alternator	fixed output alternator	hydraulic crane power supply	GS-0057
11	2543	D	Which can be considered as a drop-in replacement refrigerant?	R-500	R-123	R-134a	none of the above	
11	2544	B	In a multi-evaporator refrigeration system, a solenoid valve is installed in the liquid line before _____.	the receiver	each expansion valve	the condenser	the oil separator	

11	2545	C	When the device shown in the illustration is aligned in the cooling mode of operation, which of the following statements describes the direction the piston and valve assembly will have shifted?	The valve and piston initially shifts to the right, but is eventually pneumatically balanced in a centered position.	The piston and its associated cylinder barrel is allocated ample space for movement, thereby enabling the valve stem contact surface to separate and move to the left.	The valve and piston will have shifted to the left.	The valve and piston will have shifted to the right.	RA-0017
11	2546	B	The device "F" shown in the illustration is best used to _____.	provide an alternative to a close nipple	assist in securing a coupling half to its shaft	fasten pump casing flanges together	provide an alternative to the use tapered pins	GS-0080
11	2547	C	What is the reading of the vernier micrometer caliper scale shown in figure "D" in the illustration?	0.9253 inch	0.9403 inch	0.9453 inch	0.9553 inch	GS-0091
11	2548	D	Which of the following statements regarding refrigeration systems is/are true?	In any refrigeration system, oil and refrigerant are always present.	Refrigerant is the working fluid and is required for cooling.	The main purpose of the oil is to lubricate the compressor.	All of the above	
11	2549	D	Industrial process and commercial CFC type refrigeration equipment with annual leak rates of 35% or more, require leak repair of the system if it contains a refrigerant charge of more than _____.	15 pounds (6.8 kg)	25 pounds (11.4 kg)	40 pounds (18.1 kg)	50 pounds (22.6 kg)	
11	2550	A	Which of the listed welded joints represents the least amount of preparation?	1B	3A	3B	4A	GS-0077

11	2551	A	A light dust trail from the storage tank vent, plus a fluctuating P-tank pressure and constant movement of the material discharge hoses indicates _____.	satisfactory movement of weight material	a clogged discharge line	chunks of material are moving through the system and transfer will stop momentarily	inadequate fluidizing of the weight material	
11	2552	C	A boiler forced draft pressure gage indicates nine (9) inches of water. This corresponds to a pressure of _____.	0.216 psi	0.228 psi	0.325 psi	0.433 psi	
11	2553	B	What is the reading of the vernier micrometer caliper scale shown in figure "B" in the illustration?	0.2228 inch	0.2928 inch	0.3008 inch	0.3028 inch	GS-0091
11	2554	B	The liquid line, thermostatically controlled, solenoid valve is operated in response to the _____.	superheat in the tail coil	temperature of the box	compressor suction pressure	compressor discharge pressure	
11	2555	D	When the device shown in the illustration is in the defrost mode, the _____.	solenoid valve is de-energized and the valve assembly moves to the right	compressor discharge pressure acts on the right side of the piston causing it to move to the left	condenser pressure acts on the back of the valve forcing it to move towards the left	the solenoid valve is energized and the valve assembly is moved to the right	RA-0017
11	2556	D	The illustrated device is used to _____.	control the flow rate of liquid being removed from the tank	control the flow rate of liquid being discharged to the tank	regulate the pressure of the liquid being stored in the tank	provide a remote reading of the liquid level stored in the tank	GS-0066
11	2557	D	Most freon refrigerants are originated primarily from which of the following base molecules?	ammonia and carbon dioxide	ammonia and ethane	methane and sulfur dioxide	ethane and methane	

11	2558	D	Which of the following statements regarding the illustrated device is true?	If the valve disk is damaged, the entire valve unit must be replaced.	The plug, located in the upper left portion of the valve body can be removed to install a feedback pipe line if the valve is to be used as a pilot choke.	The cap determines the height of lift of the swinging valve disk.	The valve disk alone can be removed for replacement or reconditioning.	GS-0056
11	2559	B	The greatest drawback in the use of the device illustrated on large ocean going vessels is the _____.	use of a skeg for mounting	amount of torque required to position this rudder	positioning, directly aft of the propeller	necessity to construct the rudder in one large casting	GS-0101
11	2560	D	If solenoid "B" illustrated is energized, the _____.	pump should reverse the direction of flow	cylinder should extend	pump should discharge directly to the resevoir	cylinder should retract	GS-0041
11	2561	B	Which of the listed chemicals will eventually reach the stratosphere and react unfavorably with ozone?	fluorine	chlorine	halogen	carbon	
11	2562	D	If a block and tackle arrangement were rigged as shown in figure "D" in the illustration, the amount of force "P" required to hold the 266 pound load stationary would be _____.	40 lbs.	53 lbs.	56 lbs.	89 lbs.	GS-0110
11	2563	B	To protect a recovery or recycling machine when removing refrigerant from a burned out system, a filter drier should be installed in _____.	the system liquid line	the machine inlet	the system suction line	the container inlet	
11	2564	B	In a refrigeration system, the condenser cooling water regulating valve is directly controlled by the _____.	temperature of the cooling water	compressor discharge pressure	amount of refrigerant in the system	temperature of the refrigerant after expansion	

11	2565	A	If the solenoid valve used to control the device shown in the illustration becomes obstructed, the unit will _____.	not enter the defrost mode	remain in the defrost mode	not remain in the cool mode	remain in whatever mode it was operating in prior to the formation of the obstruction	RA-0017
11	2566	A	In a refrigeration system, the component installed downstream of the thermal expansion valve is called the _____.	evaporator	receiver	compressor	solenoid valve	
11	2567	D	What type of valve is shown in the illustration?	Globe valve - rising stem	Gate valve - rising stem	Globe valve - rising disk	Gate valve - rising gate	GS-0047
11	2568	D	Refrigerant recovery cylinders are color coded_____.	gray top and yellow lower body	gray top and light blue lower body	light blue top and yellow lower body	yellow top and gray body	
11	2569	B	The purpose of nozzles in a liquid mud system is to_____.	aerate the mud to insure proper oxygen content	maintain the quality of the mud	clean the mud from the bottom of the tanks	Prevent barate from damaging the pump	
11	2570	C	A pneumercator is an instrument used to indicate _____.	air pressure in the diesel engine starting circuit	phosphates in boiler water	tank fluid level	micro ohms in condensate	
11	2571	D	Movement of the material discharge hoses, fluctuating P-tank air pressure and a light dust trail from the receiving tank vent indicates _____.	a clogged discharge line	improper movement of the weight material	chunks of material are in the system and will stop the flow momentarily	satisfactory operation of the system	
11	2573	D	Why do OSV's with a liquid mud system generally have more than two tanks?	To increase the quantity of mud carried.	The pumps are unable to handle the greater quantity of mud carried by one or two tanks.	To reduce the amount of free communication therefore, reducing the center of gravity of the OSV.	To prevent list and stability problems when receiving half a load of fluid from the rig.	
11	2574	B	Pressure in the control tubing of a thermostatic expansion valve depends upon a direct relationship with the _____.	temperature in the box	amount of superheat at the outlet of the evaporator	compressor suction pressure	heat transferred from the saturated liquid in the evaporator	

11	2575	B	When the device shown in the illustration is operating in the cooling mode, which of the actions described maintains the position of the piston and valve assembly?	Spring force is the solitary cause for the device to remain in the extreme left side position.	The high pressure gas acting on the right side of the piston causes it to remain in that position.	The condenser bypass check valve allows the pressure to drop permitting the spring force to maintain the valve position.	The forces developed by the fluid action of the gas passing the valve stem acts to maintain its position.	RA-0017
11	2576	B	In a liquid mud system, the sea valve must be tightly secured and not leak because _____.	a leaking sea valve decreases stability of the OSV	any leakage can destroy the product being transported	leaking oil-base mud creates an enviromental hazard according to Coast Guard regulations (33 CFR)	more liquid mud will be discharged to the MODU than ordered	
11	2577	A	Which of the following steps should be taken before taking on a load of liquid mud for transport to a MODU?	Inspect tanks to insure they are clean and dry.	Test a sample to insure that the emulsifying amines do not exceed a STEL of 25 ppm.	Flood the tanks with carbon dioxide and test product with an explosimeter (gas detector).	All of the above.	
11	2578	A	It is important to circulate the liquid mud on an OSV at regular intervals to _____.	keep the mud ingredients in suspension and retain weight properties	reduce the free surface effect and increase the metacentric height (GM) during transport	increase the free surface effect and reduce the metacentric height (GM) during transport	minimize the release of explosive gases during transport	
11	2579	C	It is important to circulate liquid mud on an OSV to _____.	insure that the liquid mud maintains a weight of less than 8.3 lbs/gal.	reduce damage to the mud due to salt water contamination	ensure that the pump suctions remain unplugged and keep the liquid mud in good condition	reduce corrosion damage due to the acidic nature of zinc bromide	

11	2580	D	Unless told otherwise by the mud dock representative, the recomended circulation time and rate for most new water based liquid mud for each tank is_____.	once a day for three hours with a diesel powered mud pump at half throttle	thirty to sixty minutes every twelve hours with a diesel powered pump at full throttle or by a high capacity electric mud pump	one day circulating, three days off with a small electric mud pump	fifteen minutes every six hours with a small pump, or diesel pump at half throttle	
11	2582	C	The reading on the micrometer scale shown in figure "A" in the illustration is _____.	0.066 inch	0.071 inch	0.076 inch	0.081 inch	GS-0093
11	2583	C	HCFC-22 has been recovered from a refrigeration system during replacement of the condenser. The refrigerant can be _____.	recycled into a system that had used HCFC-11	reclaimed as a low pressure system refrigerant	returned to the system	must be destroyed, as it can no longer be used	
11	2584	C	A multiple evaporator coil unit is equipped with an evaporator back pressure regulating valve. This valve must be bypassed when pumping down the system for repairs because reduction of suction pressure would cause the valve to _____.	rupture	open	close	chatter	
11	2585	C	When the system shown in the illustration is operating in the defrost or heating mode, the majority of the gas flows through the defrost pan heater. A small quantity of the remaining gas is used to _____.	create a pressure drop to increase all flow velocities	assist in the defrosting of the equalizing line	force the remaining liquid out of the receiver and into the system	reduce the chances of any thermo-hydraulic lock occurring during the defrost cycle	RA-0018
11	2586	B	The reading on the micrometer scale shown in figure "3" in the illustration is _____.	0.133 inch	0.178 inch	0.193 inch	0.250 inch	GS-0094
11	2587	A	The refrigerants referred to as CFC's are _____.	fully halogenated	partially hydrogenated	fully carbonated	completely filled with hydrogen atoms	
11	2589	A	All refrigerant recovered from burned out small appliances must be _____.	sent to a designated reclaimation facility for processing	contained in a refillable cylinder	destroyed although it can be reused	used to clean out burn-outs	

11	2591	D	Which of the following refrigerants is an interim retrofit replacement for R-11?	R-500	R-134a	R-12	R-123	
11	2592	B	The lathe tool shown as figure "Q" in the illustration is commonly known as a/an _____.	cutting-off tool	left-cut, side-facing tool	right hand turning tool	universal turning tool	GS-0090
11	2593	A	Excess pressure used in a P-tank system will more than likely _____.	rupture the P-tank	discharge the material at an excessive rate	plug up the fixed discharge line with weight material	damage the air compressor	
11	2594	B	In preparing to remove the air from a refrigeration condenser for a large multibox water cooled type III system, all of the refrigerant in the system should be _____.	at a superheated temperature	pumped to the receiver	pumped to the evaporator	at a saturated temperature	
11	2595	D	If the three way valve shown in the illustration malfunctions while at sea, which of the following procedures can be carried out to correct the situation?	The unit should be bypassed to insure the system always operates in the cooling mode.	The pilot solenoid valve should be changed out even if it appears to be operating satisfactory.	The device may be removed from the unit using swaging tools.	The device may be rebuilt using the proper rebuild kit if provided.	RA-0017
11	2597	C	When recovering R-12 from a small appliance with a working compressor, using a recovery device manufactured after November 15, 1993, what percentage of the remaining charge must be removed from the system?	75%	80%	90%	99%	
11	2598	C	Technicians servicing small refrigeration appliances can employ what type of recovery equipment?	passive only	active only	either active or passive	do not need to recover the refrigerant	
11	2599	D	Which of the following types of refrigerants could experience fractionation?	azeotropic	near-azeotropic	zeotropic	both B and C	
11	2600	D	Which of the following represents a low-pressure refrigerant as defined by EPA regulation?	R-12	R-22	R-502	R-123	

11	2601	B	What differentiates 'system-dependent' and 'self-contained' recovery devices in refrigeration systems?	self-contained recovery devices can only be used on large CGC and HCFC units	self-contained recovery devices usually contain a compressor, system-dependent recovery devices do not	the system compressor must be working to use system dependent devices, the system compressor may or may not be operational when self-contained devices are used	there is no difference between the devices	
11	2603	C	Overfilling a refrigerant container is extremely dangerous because of the high pressures generated. The generation of pressure is the_____.	vapor pressure of the refrigerant	discharge pressure of the recovery compressor	hydrostatic pressure of the expanding liquid	discharge pressure from the recovery cylinder	
11	2604	C	The reading indicated on a vernier micrometer caliper scale is .3107 inches. Which of the figures in the illustration represents this reading?	Figure B	Figure C	Figure E	Figure F	GS-0091
11	2605	A	How do the modulating valves, found in some container refrigeration systems, differ in operation from solenoid valves found in the same system?	An unenergized modulation valve is in the normally open position.	An unenergized modulation valve is in the completely closed position.	An unenergized solenoid valve is in the normally open position.	All modulation valves have the identical operating characteristics as solenoid valves used in refrigeration systems.	
11	2606	A	If the copper tubing line at the bottom left of the diaphragm "D" should become disconnected or severed, the _____.	compressor will continue to operate as designed	compressed air receiver relief valve will open and close intermittently before the compressor cycles off at the normal cut-out pressure	intercooler relief valve will open	volumetric efficiency will initially increase by 15% then decrease to 99% of the manufacturer's original specifications	GS-0034

11	2607	C	All refrigeration systems must be protected with a _____.	high pressure cut-out	refrigerant receiver	pressure relief device	low pressure cut-out	
11	2608	A	The hydraulic graphic symbol illustrated in Fig. B is used to represent a/an _____.	variable orifice	piloted choke	belle ville spring	check valve	GS-0068
11	2609	C	If passive recovery is used on a refrigeration unit with a non-operating compressor, the recovery should be made through_____.	high side only	low side only	high and low side	venting to atmosphere, cannot be recovered	
11	2610	D	The process of removing refrigerant from a system and storing it without testing or processing is known as _____.	reclaiming	recouping	recycling	recovering	
11	2611	C	Figure "D" in the illustration is an improperly installed hose with a restriction developed at the _____.	right hand fitting being smaller than required	severe bend in loop	sharp bend formed at the left	indicated radial twist	GS-0063
11	2612	C	Which of the following is not part of the high side of a refrigeration system?	condenser	receiver	accumulator	liquid line	
11	2613	B	Refillable tanks used to ship CFC and HCFC refrigerants or used to recover these refrigerants must meet the standards of _____.	the United States Coast Guard	the United States Department of Transportation	Underwriters Laboratories	the Enviromental Protection Agency	
11	2614	C	If you find an extremely large refrigerant leak while using a halide torch, your flame will _____.	change from blue to orange	'flare up' and remain lighted	probably go out	stay blue	
11	2615	B	How does a refrigeration solenoid valve differ from a modulating valve?	A solenoid valve can only be installed in liquid lines.	A liquid line solenoid valve is either completely opened or closed, whereas a modulation valve is positioned according to the strength of the applied electrical signal.	Solenoid valves are only used in low voltage refrigeration control systems, while modulation valves are used in high voltage applications.	Both valves operate in exactly the same manner, only the manufacturer's terminology is the differentiating factor.	

11	2616	D	A 'drop-in' long term replacement for R-22 in a small refrigeration appliance is _____.	R-123	R-134a	R-502	none of the above	
11	2619	C	Within the territorial limits fo the United States violations of the Clean Air Act of 1990, that includes the intentional release of R-11, R-12, R-22 and other related class I or class II substances may result in fines for each violation per day of _____.	$5,000	$10,000	$25,000	$50,000	
11	2620	C	The reading on the micrometer scale shown in figure "B" in the illustration is _____.	0.402 inch	0.410 inch	0.412 inch	0.415 inch	GS-0093
11	2621	C	With regards to the illustrated rudder, item "B" is referred to as the _____.	rudder stock	rudder horn	fair water	gudgeon	GS-0131
11	2622	B	The reading indicated on a vernier micrometer caliper scale is .4715 inches. Which of the figures in the illustration represents this reading?	Figure A	Figure C	Figure E	Figure F	GS-0091
11	2623	D	Operating a P-tank system with excessive pressure in the tank will most likely cause _____.	damage to the air compressor	the dry bulk material to be discharged at an excessive rate	the discharge to plug up with weight material	damage to the slope sheets	
11	2624	B	Which of the following instruments can be used to measure the rate of air flow?	Thermometer	Anemometer	Psychrometer	Areometer	
11	2626	B	The illustrated thread form would be used with a/an _____.	pump shaft coupling nut	lathe lead screw	schedule 80 heavy iron pipe	3/4-10 NC threaded stock	GS-0088
11	2627	D	When using nitrogen to pressure leak test a system, the nitrogen tank should always have a _____.	cut off valve	blue top	level indicator	regulator	
11	2628	D	The weld type illustrated and indicated as '5B' is known as a/an _____.	X	K	double bevel	double J	GS-0077
11	2629	D	Which of the refrigerants listed is considered to be clorine free?	R-12	R-221	R-142	R-152a	

11	2630	C	If the flow rate and pressurized oil from a variable capacity pump were supplied to the device illustrated, the _____.	speed would increase, horsepower and torque would decrease	speed would decrease, horsepower and torque would increase	horsepower, torque, and speed would increase proportionally	horsepower, torque, and speed would decrease proportionally	GS-0058
11	2631	B	Consultation should be made prior to beginning the conversion of an existing CFC-12 system to HFC-134a with_____.	the Environmental Protection Agency	the system's manufacturer	the United States Coast Guard	the owner of the system	
11	2632	B	If a block and tackle arrangement were rigged as shown in figure "D" in the illustration, the amount of force "P" required to hold the 283 pound load stationary would be _____.	42 lbs.	94 lbs.	113 lbs.	114 lbs.	GS-0110
11	2633	A	If a block and tackle arrangement were rigged as illustrated in figure "D", the amount of force "P" required to hold the 283 pound load stationary would be _____.	94 lbs.	107 lbs.	114 lbs.	125 lbs.	GS-0110
11	2634	D	When air is at its dew point it is at its _____.	lowest absolute humidity	lowest relative humidity	highest absolute humidity	highest relative humidity	
11	2635	D	The movement of the armature within a modulating valve as used on some refrigeration systems is opposed by the _____.	pressure of the flash gas developed	vacuum formed as the refrigerant flows through the valve	weight of the armature	spring force	
11	2636	B	A simplex pump making 60 pumping strokes per minute has a 10 inch stroke and a 6 inch diameter water cylinder, which is 75% full for each stroke. How many gallons of water are discharged per hour?	1,339 GPH	3,305 GPH	4,208 GPH	6,610 GPH	
11	2637	B	Which of the refrigerants listed is considered as a suitable replacement for R-11?	R-22	R-123	R-134a	R-227	
11	2638	A	If you have a simplex single acting reciprocating pump making 100 strokes/minute with 6" diameter cylinder, and an 11" stroke with 90% volumetric efficiency, what is the capacity of this pump?	61 gpm	121 gpm	242 gpm	407 gpm	

11	2639	A	Under what conditions would the oily-water separator, shown in the illustration, fail to effectively process a mixture of oily-water?	When the oily-water mixture is an emulsion the effectiveness of the separator is greatly reduced.	Without detergents the effectiveness of the separator is greatly reduced.	When there are small air leaks in the discharge piping, the effectiveness of the separator will greatly reduced.	When the oily-water separator is in the process mode it will effectively handle emulsions.	GS-0153
11	2640	D	Which of the illustrated lathe tools would be used to produce figure V?	A	B	D	E	GS-0009
11	2641	C	Persons recovering refrigerant from small appliances must be certified as a _____.	Type II technician	Type III technician	Type I or Universal technician	All of the above	
11	2642	B	Which of the refrigerants listed is considered as a suitable and limited ozone producing alternative for R-11?	R-22	R-123	R-134a	R-227	
11	2643	D	The air compressor for a P-tank unit should be operated for several minutes with its discharge valves open to the atmosphere to _____.	assist in unloading the compressor during its start up	remove bulk material dust from the discharge lines	check the pilot unloader operation	assit in delivering moisture free air	
11	2644	B	As the amount of moisture in the air increases, the difference between the dry bulb and wet bulb temperatures will _____.	increase	decrease	remain unchanged	be greatest at dew point	
11	2646	B	In the hydraulic anchor windlass system illustrated, if the power to the electric motor is on, but the wildcat turns slowly or not at all, even without a load being applied, and nearly normal pressure is indicated on the high side of the system, the probable cause is the _____.	replenishing pump coupling is broken	relief valve "L" is not closing	manual transfer valve is in the wrong position for the main pump being operated	pressure from "E" has failed to bleed off when "J" is placed in the operating position	GS-0160
11	2647	A	Alkylbenzene ISO 32 cSt refrigerant oil is miscible and suitable to use with_____.	R-22	R-32	R-134a	R-143a	

11	2649	D	Refrigerant leaks in a small shipboard water cooler _____.	must be repaired within 30 days	must be repaired if the annual leak rate is 35% of the total charge above 50 lbs	must be repaired if the annual leak rate is 15% of the total charge	do not have to and are not required to be repaired	
11	2650	C	The reading on the micrometer scale shown in figure "III" in the illustration is _____.	0.631 inch	0.642 inch	0.687 inch	0.692 inch	GS-0095
11	2651	C	As shown in the illustration, a section of standard weight, seamless steel pipe, has an external diameter of 7.8 inches. When the pipe, is bent into a 90 degree turn, the length of the outside edge of the curve "A-B" will exceed the length of the inside edge of the curve "C-D" by _____.	8.626 inches	10.786 inches	12.252 inches	14.514 inches	GS-0108
11	2652	A	The intentional venting of class I and II refrigerants to the atmosphere within the territorial limits of the United States became unlawful on _____.	1-Jul-92	1-Jul-94	14-Nov-94	14-Nov-99	
11	2653	D	According to the data provided in the table, if the evaporator pressure is 29.4 psia and the temperature of the refrigerant leaving the evaporator is 35°F, approximately how much superheat was picked up in the evaporator?	10°F	15°F	20°F	25°F	RA-0023
11	2654	D	The speed of a belt driven ventilation fan can be increased without changing the motor speed by using a _____.	smaller diameter fan	smaller diameter drive pulley	larger diameter fan	larger diameter drive pulley	
11	2655	B	If the electric coil to a refrigeration system modulation valve develops an open, the valve will _____.	move to the open position due to the flow of refrigerant across the valve orifice	move to the open position due to the spring pressure acting upon the armature	tend to move to a centered position, thereby maintaining box temperature	remain in whatever position it was in prior to developing the open	

11	2656	B	What will cause the throughput of the oily-water separator illustrated to decrease when operating in the processing mode?	The flow control valve 'V-3' is open excessively wide and permitting an excessive amount of bilge water to enter the separator, resulting in an overload.	A decrease in the processing ability may be caused by worn pump internals.	The throughput of the separator may be reduced if the inlet valve 'V-4' remains open during processing mode.	The throughput of the separator varies while in the processing mode as determined by the quantity of oil in the emulsion.	GS-0113
11	2657	C	If you have a simplex single acting reciprocating pump making 160 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump?	104 gpm	52 gpm	26 gpm	91 gpm	
11	2658	C	With a service gage manifold connected to a refrigerant compressor as illustrated, which arrangement of the gage manifold valves and compressor service valves would allow for the reading of the compressor suction pressure?	Valves "A" and "B" open, valves "C" and "D" closed on their front seats.	Valves "A" and "B" closed, valves "C" and "D" open just off the back seats.	Valve "A" closed and valve "D" just off its back seat.	Valves "A" and "B" open, valves "C" and "D" open in mid- position.	RA-0003
11	2659	D	A flat piece of sheet metal can be fastened to the device illustrated and would require the use of which listed type of fastener?	pop rivet	flat head countersunk machine screw	carriage bolt	cap screw	GS-0036
11	2660	B	The approximate quantity of hydraulic oil available to the system can be determined by _____.	removing "G" and measuring the level in the sump with a 'dip stick'	observing the color change of the column in "J" and its comparative height	removing "D" and measuring the height of the remaining liquid with a float stick	removing the cap from "A" and measuring the height of the hydraulic oil	GS-0118
11	2661	D	When the devices shown in the illustration are used in piping systems as primary differential pressure flow elements, pipe tap installations are required to be made at the side of the conduit for figure _____.	A	D	E	All of the above	GS-0126

11	2662	A	The device illustrated is referred to as a/an _____.	inverted bucket trap	upright bucket trap	"P" type trap	none of the above	GS-0048
11	2663	C	All shipboard personnel responsible for the maintenance and repair of air conditioning systems must be certified through an approved Enviromental Protection Agency (EPA) program _____.	if the system is using HFC-134A or HCFC-123	before they can set the operating controls of the system	if they will be performing maintenance, service or repair that could resonably be expected to release Class 1 or Class 2 refrigerants into the atmosphere	all of the above	
11	2664	C	A particular space is air conditioned by a 25 ton water cooled system. While troubleshooting, the space is found to be too warm, and the compressor is not operating. A service check determines the compressor suction pressure to be above the normal cut-in point, with a normal head pressure, and high evaporator superheat. Which of the problems listed is the cause for the conditions stated above?	A liquid line service valve is partially closed.	The expansion valve feeler bulb is loosely clamped to the suction line.	The suction pressure control contacts are stuck open.	A suction line is kinked or partially obstructed and blocking refrigerant circulation.	
11	2665	C	Solenoid valves used in refrigeration systems may be classified as _____.	normally open, de-energized	normally closed, energized	normally open or normally closed	normally energized or normally de-energized	
11	2666	D	If you have a simplex single acting reciprocating pump making 160 strokes/minute, with a 5" diameter cylinder, a 7" stroke and operating with 96% volumetric efficiency, what is the capacity of this pump?	183 gpm	91 gpm	128 gpm	46 gpm	

11	2668	D	If you have a duplex double acting reciprocating pump making 180 strokes/minute, with a 4" diameter cylinder, a 6" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump?	54 gpm	81 gpm	27 gpm	108 gpm	
11	2669	B	Small appliances with less than three pounds of refrigerant should be _____.	liquid charged	vapor charged	either vapor or liquid charged	initially liquid charged and then topped with a vapor charge	
11	2672	C	The steering gear shown in the illustration, when compared to the more conventional linear actuator ram units is/are _____.	less likely to sustain oil leaks	considered by inspection societies to be more dependable than the more conventional units due to the use of the vane motor	designed to be of lesser weight and size when compared with conventional units producing the same torque	all of the above are correct	GS-0116
11	2673	D	The air compressor for a P-tank unit should be operated for several minutes with its discharge valves open to the atmosphere to _____.	discharge moisture formed during the compression process	dry out fixed discharge piping and hoses	assist in producing water free compressed air	all of the above	
11	2674	C	In a chilled water air conditioning unit using a reciprocating compressor, the refrigerating effect of the primary refrigerant can be increased by _____.	increasing refrigerant pressure in the coil	increasing chilled water flow through the cooler	subcooling the refrigerant in the condenser	superheating the refrigerant in the compressor	

11	2675	D	In a refrigeration system, which of the following statements describes the actions occurring when a solenoid valve, used in conjunction with an unloader head, is energized?	The solenoid valve directs high pressure gas to the valve lifting device raising the suction valve off its seat and causing one specific cylinder to become unloaded.	The solenoid valve directs high pressure gas to the underside of the unloading piston, causing it to rise and allowing the recirculating ports to be opened.	When the solenoid valve becomes energized, the valve ports become closed, allowing discharge pressure to build up above the piston, shifting it and causing it to unload.	The solenoid valve allows the refrigerant to pass from the suction chamber to the top of the unloader piston, causing the piston to lift and unload the cylinder.	
11	2676	B	A flat piece of thin sheet metal fastened to the device illustrated, would most likely require the use of which listed type of fastener?	countersunk flat head, phillip screw	round head machine screw	fitted or body bolt	molly screw	GS-0036
11	2677	D	Moisture is removed from CFC-12 using a recycler by _____.	bleeding noncondensables off	opening a drain petcock on the oil separator	condensing the water in the condenser	using a dehydrator cartridge	
11	2678	B	The type of heat indicated in section "2" in the illustration is known as _____. I. latent heat of fission II. latent heat of fusion	I only	II only	Both I and II	Neither I nor II	SG-0001
11	2680	D	The thread machined on the device illustrated is a/an _____.	one-eighth inch right-hand national coarse	one inch, right-hand national coarse	one-eighth inch, left-hand national coarse	one inch, left-hand national coarse	GS-0038
11	2681	B	Of the four refrigerants CFC-11, CFC-12, HFC-134a, and HCFC-22; HCFC-22 operates at the _____.	lowest system pressure with the lowest boiling point	highest system pressure with the lowest boiling point	lowest system pressure with the highest boiling point	highest system pressure with the highest boiling point	
11	2683	A	Disposable refrigerant cylinders may contain a maximum amount of refrigerant of _____.	50 pounds	40 pounds	30 pounds	20 pounds	
11	2684	D	The expansion valve used in a refrigeration system regulates the _____.	superheat of the gas leaving the compressor	back pressure in the evaporator	temperature in the refrigerated space	degree of superheat of the gas leaving the evaporator	

11	2685	A	The carbon ring of a refrigeration compressor crankshaft mechanical seal is held in position against the stationary ring by using a/an _____.	spring	elliptical retaining assembly	woodruff key	thrust washer	
11	2686	B	If you have a simplex single acting reciprocating pump making 160 strokes/minute, with a 4" diameter cylinder, a 10" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump?	131 gpm	33 gpm	65 gpm	163 gpm	
11	2687	B	If oil under pressure is supplied to the space between "N" and "I" in the illustration _____.	"O" will be hydraulically locked in place even though oil is returned to the main pump from the left side of "N" and the area to the right of "P"	"O" will rotate clockwise as oil is returned from the left side of vane "N"	"O" will rotate counter-clockwise as oil is returned from the area between "N"	"U" will rotate counter-clockwise as oil is returned from the area between "N" and the vane located at "P"	GS-0116
11	2688	B	As shown in the illustration, a section of standard weight, seamless steel pipe, has an external diameter of 7.3 inches. When the pipe, is bent into a 90 degree turn, the length of the outside edge of the curve "A-B" will exceed the length of the inside edge of the curve "C-D" by _____.	10.263 inches	11.467 inches	13.886 inches	16.467 inches	GS-0108
11	2690	D	An untagged refrigerant cylinder is found in your storage area. It is light (sky) blue, and the refrigerant it contains is _____.	CFC-12	CFC-11	HCFC-22	HFC-134a	
11	2691	A	The heat removed from a fluid as indicated by line "3" in the illustration is known as _____. I.subcooling II. latent heat of condensation	I only	II only	Both I and II	Neither I nor II	SG-0001

11	2692	B	In the illustration, the item labeled as '31' is _____. I. used to vent off air from the stuffing box II. used to supply sealing water to the stuffing box	I only	II only	Both I and II	Neither I nor II	GS-0012
11	2693	A	Begining August 12, 1993, anyone using recovery equipment to remove refrigerant from small appliances must certify to the EPA that they have _____.	equipment capable of removing 90% of the refrigerant when the compressor is operating or achieving a 4 inch vacuum under conditions of ARI 740-1993	equipment capable of removing 80% of the refrigerant or achieving a 2 inch vacuum under conditions of ARI 740-1993	equipment capable of achieving a 23 inch vacuum under conditions of ARI 740-1993	none of the above	
11	2694	B	In a refrigeration system, the bulb for the thermal expansion valve is always located _____.	in the middle of the evaporator coils	near the evaporator coil outlet	near the evaporator coil inlet	at the begining of the bottom row of the evaporator coils	
11	2695	B	When installing a mechanical shaft seal on a refrigeration compressor, extreme care must be taken to prevent _____.	any lubricant from contacting the carbon surface that would cause the expulsion of the saturated teflon film	dirt and foreign particles from coming in contact with the highly polished sealing surfaces	the teflon film from being damaged by the corrosive effects of excessive handling	shaft scoring due to improper use of the installation tools provided with the seal kits	
11	2697	B	What would be the result of throttling the suction valve to the point where the flow was less than that recommended by a centrifugal pump manufacturer? I. The designed discharge head would be reduced. II. The packing life would be greatly reduced.	I only	II only	Both I and II	Neither I nor II	

11	2698	C	In order to maximize the performance of an operating centrifuge, you can adjust the fuel oil _____. I. Viscosity II. through put	I only	II only	Both I and II	Neither I nor II	
11	2699	C	Why should the refrigerant stored in a recovery cylinder be allowed to equalize with room temperature?	to prevent the rupture disk from blowing	this is a way to check refrigerant level in the cylinder	this is the only way to read refrigerant pressure accurately	the recovery cylinder could explode if the temperature rose too quickly	
11	2701	B	The type of thread illustrated is a/an _____.	acme thread	national coarse thread	square thread	can not be determined from information provided	GS-0038
11	2702	B	What will cause the throughput of the oily-water separator shown in the illustration to decrease when operating in the processing mode?	The flow control valve 'V-3' is open excessively wide and permitting an excessive amount of bilge water to enter the separator, resulting in an overload.	A decrease in the processing ability may be caused by worn pump internals.	The throughput of the separator may be reduced if the inlet valve 'V-4' remains open during processing mode.	The throughput of the separator varies while in the processing mode as determined by the quantity of oil in the emulsion.	GS-0113
11	2703	B	P-tank dry bulk material discharge hoses must be connected _____.	after admitting compressed air to the P-tank	before admitting compressed air to the P-tank	after opening the jet air	before the P-tank is loaded	
11	2704	C	Refrigeration systems using forced air circulation evaporators have a tendency to cause rapid dehydration of foods unless _____.	a complete change of air takes place within each 30 second interval	foods are packaged in corrugated storage boxes	the air is circulated slowly with a minimum temperature change	a humidifier is installed within the refrigeration system	
11	2705	C	The color of the refrigeration oil can indicate various operating conditions of the compressor/ refrigeration system in which it is used. Black oil can be an indication of _____.	copper plating caused by moisture in the system	bearing wear or piston scoring	carbonization resulting from air in the system	gasket breakdown	

11	2706	C	Potable and nonpotable water systems aboard ship _____.	may be temporarily connected with a removable spool	are permanently connected through a double stop valve	may never be cross-connected by any means	may be connected if they are used only for wash water	
11	2708	B	If you have a duplex double acting reciprocating pump making 190 strokes/minute, with a 3" diameter cylinder, a 12" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump?	63 gpm	126 gpm	251 gpm	31 gpm	
11	2710	C	Which of the figures in illustration GS-0080 would be used in conjunction with figure "B" of the device shown in illustration GS-0124?	figure B	figure C	figure F	figure G	GS-0080
11	2711	C	HCFC-123 presents health threats to service technicians, which may include its _____.	flammability as a liquid	freezing in the compressor	toxic threat	being caustic and strong offensive odor	
11	2712	C	The type of heat indicated in section "4" in the illustration is known as _____. I. latent heat of condensation II. latent heat of vaporization	I only	II only	Both I and II	Neither I nor II	SG-0001
11	2714	A	The valve shown in the illustration is installed on the suction side of the compressor in a refrigeration system. Which of the following statements about this valve is correct?	"E" is the inlet.	"D" is the back seat.	The valve is of the packless type.	All of the above.	RA-0008
11	2715	D	The oil observed in the sight glass of an operating refrigeration compressor appears to be brownish in color. This is indicative of _____.	carbonization caused by air in the system	bearing wear or piston scoring	head gasket breakdown	copper plating caused by moisture in the system	
11	2716	A	In a hydraulic system using the device illustrated, the high pressure return is provided by _____.	A	B	C	D	GS-0118
11	2717	A	In addition to the recovery of refrigerant, recovery machines not necessarily able to pull a vacuum can also evacuate a system of _____.	non-condensable gases	oil	moisture	acids	

11	2718	B	If a block and tackle arrangement were rigged as shown in figure "D" in the illustration, the amount of force "P" required to hold the 346 pound load stationary would be _____.	52 lbs.	115 lbs.	129 lbs.	138 lbs.	GS-0110
11	2719	A	If you have a simplex single acting reciprocating pump making 100 strokes/minute with a 6" diameter cylinder, and a 10" stroke at an 80% volumetric efficiency, what is the capacity of this pump?	49 gpm	98 gpm	196 gpm	272 gpm	
11	2720	D	If you have a simplex single acting reciprocating pump making 120 strokes/minute with a 5" diameter cylinder, a 5" stroke, and operating with a 93% volumetric efficiency, what is the capacity of this pump?	61 gpm	38 gpm	30 gpm	24 gpm	
11	2721	C	CFC refrigerants exposed to high temperture or direct flame, will decompose and may produce _____.	methyl chloride	ammonia	hydrofluoric acid	ozone	
11	2722	C	When operating the oily-water separator shown in the illustration, why is it necessary to avoid detergents mixing with the bilge water?	The detergent will aggitate within the seperator and cause it to explode.	The detergent will damage the special protective coating in the inside of the unit.	The detergents may cause the oil and water to become an emulsion which this unit is not capable of separating.	The detergent will foam causing the main bilge pump to become airbound.	GS-0153
11	2723	B	The purpose of the jet air line in a P-tank system is to _____.	blast bulk material out of the fill line by using high air pressure	fluidize dry material in the material discharge line	fill the P-tank	pressure the P-tank	
11	2724	C	Which of the lettered components shown in the illustration indicates the high pressure cutout?	E	B	C	F	RA-0005

11	2725	A	The color of the oil observed in the sight glass of an operating refrigeration compressor experiencing bearing wear or piston scoring would appear _____.	gray or metallic	black	clear, because the heavier particles would gravitate to the bottom of the sump	as a light blue-green	
11	2726	B	A shot of anchor chain is equal to _____.	one chain link	one - 90 foot segment	90 fathoms	one - 15 foot segment	
11	2727	A	A purge cycle is required on all low pressure chillers because _____.	such a chiller can operate at a pressure below atmospheric pressure	evacuation of all air from a chiller is not possible	chillers are often opened for mainatenance	because of the refrigerant's low boiling point	
11	2728	A	If you have a simplex single acting reciprocating pump making 200 strokes/minute with 3" diameter cylinder, a 4" stroke, and operating with a 93% volumetric efficiency, what is the capacity of this pump?	11 gpm	23 gpm	40 gpm	46 gpm	
11	2729	B	If you have a simplex single acting reciprocating pump making 100 strokes/minute with a 6" diameter cylinder, a 7" stroke, operating with a 90% volumetric efficiency, what is the capacity of this pump?	105 gpm	39 gpm	77 gpm	107 gpm	
11	2732	A	If you have a simplex single acting reciprocating pump making 100 strokes/minute with a 6" diameter cylinder, a 4" stroke, operating with a 90% volumetric efficiency, what is the capacity of this pump?	22 gpm	20 gpm	88 gpm	44 gpm	
11	2733	B	If you have a simplex single acting reciprocating pump making 110 strokes/minute with a 7" diameter cylinder, a 8" stroke, operating with a 91% volumetric efficiency, what is the capacity of this pump?	267 gpm	67 gpm	133 gpm	152 gpm	

11	2735	B	Which of the listed statements describes the reason why oil foaming occurs when starting a refrigeration compressor?	If the oil level is not initially high, this condition is the result of agitation created by the movement of the mechanical components.	This condition is the result of the sudden low pressure created in the crankcase at start up causing the release of refrigerant accumulated within the oil.	This will occur only if crankcase heaters are used.	This phenomenon is inherent only in hermetically sealed units and is always provisional.	
11	2736	A	As shown in the illustration, a section of standard weight seamless steel pipe, has an external diameter of 7.1 inches. When the pipe, is bent into a 90 degree turn, the length of the outside edge of the curve "A-B" will exceed the length of the inside edge of the curve "C-D" by _____.	11.153 inches	13.635 inches	16.153 inches	20.106 inches	GS-0108
11	2737	D	What is the cooling medium used for most portable recovery unit condensers aboard ship?	condenser water vapor at the outlet	air conditioner drains	chiller water taken at inlet	potable water	
11	2738	C	If you have a simplex single acting reciprocating pump making 190 strokes/minute with a 6" diameter cylinder, a 5" stroke, and operating with an 88% volumetric efficiency, what is the capacity of this pump?	102 gpm	85 gpm	51 gpm	205 gpm	
11	2739	D	If you have a simplex single acting reciprocating pump making 100 strokes/minute with a 6" diameter cylinder, a 5" stroke, and operating with a 90% volumetric efficiency, what is the capacity of this pump?	55 gpm	110 gpm	38 gpm	28 gpm	

11	2740	C	When a horizontal type centrifugal pump is used for dewatering the engine room bilges, you would _____. I. use a rotary, liquid piston type pump to obtain a prime II. partially open the sea suction valve, then gradually switch over to the required engine room bilge suction valve	I only	II only	Either I or II	Neither I nor II	
11	2741	C	The most cost-effective method of recovering refrigerant from a chiller with more than 5 lbs of refrigerant, to meet EPA requirements is to use a _____.	liquid pump	vapor recovery machine	liquid followed by vapor recovery	vapor followed by liquid recovery	
11	2742	C	If you have a simplex single acting reciprocating pump making 100 strokes/minute with a 7" diameter cylinder, a 9" stroke, and operating at a 90% volumetric efficiency, what is the capacity of this pump?	233 gpm	135 gpm	67 gpm	270 gpm	
11	2743	D	The bitter end is the _____.	looped end of a mooring cable	end of the chain shackled to the anchor	fixed end of the mooring cable fastened to the mooring winch drum	end of the anchor chain fastened to the vessel	
11	2744	B	Which of the listed refrigerants has been more suitable than the others for use in a centrifugal refrigeration compressor?	R-12	R-11	Ammonia	Carbon dioxide	

11	2745	C	A notch may be provided in the valve seat, or a metering hole is placed within the valve body of a thermostatic expansion valve. Which of the following statements describes the utilization of these methods?	These arrangements are rarely used because the high superheat temperature produced within the coil during the defrost mode causes the valve to thermostatically open wide.	The notch or metering hole allows by-passing of the refrigerant should the expansion valve freeze closed due to excessive moisture within the system.	Either of these methods will permit hot gas to force the liquid from the receiver through the expansion valve during the hot gas defrost cycle.	The notch or metering hole reduces most diminutive flow variations across the device.	RA-0018
11	2746	D	P-tanks on board a supply boat are filled through the _____.	jet air or purge line	discharge line	fill line by gravity	pressurized fill line	
11	2747	D	An estimated 15% of all refrigerant emissions from chillers occur during _____.	servicing	purging	charging	normal operation	
11	2748	D	If you have a simplex single acting reciprocating pump making 100 strokes/minute with a 7" diameter cylinder, an 11" stroke, and operating with a 90% volumetric efficiency, what is the capacity of this pump?	165 gpm	330 gpm	407 gpm	82 gpm	
11	2749	A	If you have a simplex single acting reciprocating pump making 100 strokes/minute with a 7" diameter cylinder, a 12" stroke, and operating with a 90% volumetric efficiency, what is the capacity of this pump?	90 gpm	180 gpm	360 gpm	529 gpm	
11	2750	B	If you have a simplex single acting reciprocating pump making 100 strokes/minute with 7" diameter cylinder, and a 13" stroke with a 90% volumetric efficiency, what is the capacity of this pump?	390 gpm	97 gpm	672 gpm	195 gpm	
11	2751	A	In refrigeration systems, which type of contamination will the reclamation process be unable to separate?	mixed refrigerants	acid	moisture	air	

11	2752	B	In the hydraulic anchor windlass system illustrated, if the power to the electric motor is on, but the wildcat does not turn, and pressure can not be developed on either side of the system, the probable cause is the _____.	replenishing pump coupling is broken	relief valve is not closing	manual transfer valve is in the wrong position for the main pump being operated	spring set point for "I" is too low	GS-0160
11	2753	C	What is the maximum volume to which refillable refrigeration cylinders should be filled?	60% full	70% full	80% full	90% full	
11	2754	B	In addition to moisture, a refrigerant dehydrator charged with silica gel is designed to absorb _____.	refrigerant	acids	noncondensable gases	refrigerant oil	
11	2755	D	The device shown in the illustration is in the defrost mode. Normally, the thermal expansion valve, sensing a relatively warm temperature at the coil outlet, would cause the expansion valve to open wider. If this operation is correct, why is it necessary for notches or metering holes to be provided within the valve body?	During defrost, the expansion valve will not open due to the pressure acting upon the upper area of the valve disc being greater than the pressure acting on the bottom of the valve.	During defrost, the expansion valve will open, due to the net effect of the increase in sensing bulb temperature, creating an atypical latent heat gain.	During defrost, the rapid flow through the equalizing line creates a pressure drop, permitting the expansion valve to open wider.	During defrost, the increase in pressure at the tail coil end is fed back through the equalizing line to overcome the forces generated by the diaphragm of the power element.	RA-0018
11	2756	B	In checking the level of a tank, three pneumercator readings have been taken. If each reading is higher than the last, this indicates that _____.	excessive charging air was supplied	insufficient charging air has been supplied	the relief valve is sticking	the tubing between the tank and the gauge has a leak	
11	2757	A	In a refrigeration system, The push-pull technique can be used for the recovery of _____.	both liquid and vapor	liquid only	vapor only	should never be used with low pressure systems	
11	2758	A	All of the links in the next to the last inboard shot of chain are painted _____.	yellow	white	red	orange	
11	2759	C	A rupture disc on a recovery tank for low pressure refrigerants relieves at _____.	1 psig	10 psig	15 psig	25 psig	

11	2761	C	If you have a simplex single acting reciprocating pump making 100 strokes/minute with a 6" diameter cylinder, a 14" stroke with a 90% volumetric efficiency, what is the capacity of this pump?	154 gpm	840 gpm	77 gpm	308 gpm	
11	2762	D	If you have a simplex single acting reciprocating pump making 100 strokes/minute with a 6" diameter cylinder, a 13" stroke, at 90% volumetric efficiency, what is the capacity of this pump?	143 gpm	286 gpm	672 gpm	72 gpm	
11	2763	C	When removing the primary refrigerant from a system using water as a secondary refrigerant, it is important to follow which procedure(s) to safeguard the equipment?	Insure that the water doesn't become contaminated with oil in the direct contact heat exchanger.	Insure that the water and refrigerant separator is functioning properly.	Insure that the water is drained or continually circulating to avoid freeze-up.	Leave some refrigerant in the system to prevent the water from contaminating the referigerant if there is a leak.	
11	2764	A	In a vapor compression refrigeration system with a freeze, dairy, and thaw box, a solenoid valve should be installed _____.	immediately before each expansion valve	on the inlet side of the receiver	in the liquid line bypassing the expansion valve	in the vapor line bypassing the oil separator	
11	2765	A	Which of the listed components of the refrigeration system shown in the illustration provides the functions similar to an evaporator during the heating cycle of the unit?	The accumulator, device "20".	The condenser, device "6".	The receiver, device "9".	The defrost pan heater, device '26'.	RA-0018
11	2766	B	P-tanks are filled through the _____.	discharge line	pressurized fill line	fill line by gravity	the hatch or manway in the top of the tank by gravity	
11	2767	C	All of the links in the last shot of anchor chain are painted _____.	yellow	white	red	orange	

11	2768	A	If you have a simplex single acting reciprocating pump making 100 strokes/minute with a 6" diameter cylinder, a 12" stroke with a volumetric efficiency of 90%, what is the capacity of this pump?	66 gpm	132 gpm	264 gpm	529 gpm	
11	2769	B	The rupture disc on a low pressure centrifugal unit relieves pressure directly from the _____.	economizer	chiller	condenser	compressor	
11	2770	D	If a block and tackle arrangement were rigged as shown in figure "D" in the illustration, the amount of force "P" required to hold the 396 pound load stationary would be _____.	79 lbs.	98 lbs.	118 lbs.	132 lbs.	GS-0110
11	2771	B	Inspection of the water-sides of chillers and condensers for leaking tubes should be conducted on a regular basis. How frequently on a minimum basis should these inspections be conducted?	once a month	once every six months	once a year	once every other year	
11	2772	B	If you have a duplex single acting reciprocating pump making 100 strokes/minute with a 7" diameter cylinder, an 11" stroke and operating at a 90% volumetric efficiency, what is the capacity of this pump?	82 gpm	165 gpm	330 gpm	407 gpm	
11	2773	C	If you have a duplex single acting reciprocating pump making 100 strokes/minute, with a 7" diameter cylinder, a 12" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump?	360 gpm	90 gpm	180 gpm	529 gpm	
11	2774	D	The thermostat controlling the operation of the solenoid valve to a refrigerated box senses _____.	evaporator coil inlet temperature	evaporator coil outlet temperature	compressor discharge temperature	the refrigerated box temperature	
11	2775	D	Which of the listed item numbers represents the drip pan heater used in the refrigeration system shown in the illustration?	6	8	18	26	RA-0018

11	2777	B	Charging liquid CFC-11 into a system under a heavy vacuum could cause _____.	the purge unit to operate	system secondary refrigerant to freeze	air and moisture to enter the reciever	rupture disk to rupture	
11	2778	B	Which of the following characteristics is true concerning the device shown in the illustration?	One suction and one discharge event is completed for each revolution.	Correct rotation of the impeller is clockwise as shown.	The unit is designed to efficiently pump liquids.	The unit is not designed for continuous duty operation.	GS-0075
11	2779	D	As shown in the illustration, a section of standard weight seamless steel pipe, has an external diameter of 6.1 inches. When the pipe, is bent into a 90 degree turn, the length of the out side edge of the curve "A-B" will exceed the length of the inside edge of the curve "C-D" by _____.	6.189 inches	7.291 inches	9.006 inches	9.582 inches	GS-0108
11	2780	B	If you have a duplex single acting reciprocating pump making 100 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump?	77 gpm	154 gpm	308 gpm	840 gpm	
11	2781	C	The EPA allows a large low pressure system to be pressurized during repairs by _____.	adding excess refrigerant	adding nitrogen	adding heat with controlled hot water	adding CFC-22	
11	2782	B	If you have a duplex single acting reciprocating pump making 100 strokes/minute, with a 6" diameter cylinder, a 13" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump?	72 gpm	143 gpm	286 gpm	672 gpm	
11	2783	A	In order to recognize the amount of anchor chain paid out, specific portions of the chain are color coded and wrapped with wire. A red painted detachable line would be found between the _____.	number 1 and 2 shots of chain	number 2 and 3 shots of chain	number 3 and 4 shots of chain	all of the above	

11	2785	D	Which of the listed item numbers represents the low pressure cutout of the refrigeration system shown in the illustration?	24	28	29	30	RA-0018
11	2786	B	Dust covers or plugs must be placed on all dry material fill and discharge lines P-tanks to _____.	maintain good seamanship	prevent moisture from entering the tank	prevent accidental discharge on deck	prevent accidental filling of the tank	
11	2787	C	The high pressure cut-out switch used on refrigeration units for low pressure systems is set to shut off the compressor at _____.	1 psig	5 psig	10 psig	15 psig	
11	2789	C	If you have a duplex single acting reciprocating pump making 100 strokes/minute, with a 6" diameter cylinder, a 12" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump?	529 gpm	66 gpm	132 gpm	264 gpm	
11	2790	D	If you have a duplex single acting reciprocating pump making 100 strokes/minute, with a 6" diameter cylinder, a 11" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump?	242 gpm	407 gpm	61 gpm	121 gpm	
11	2791	B	The inlet of the purge units used with some compressors in low pressure refrigeration systems is connected to the _____.	economizer	condenser	compressor	evaporator	
11	2792	D	Which illustrated device would be best suited for measuring the flow rate of wet gases using a primary, differential pressure, flow element?	Figure A	Figure D	Figure E	All of the above	GS-0126
11	2793	B	If you have a duplex single acting reciprocating pump making 100 strokes/minute, with a 6" diameter cylinder, a 10" stroke and operating with 80% volumetric efficiency, what is the capacity of this pump?	98 gpm	49 gpm	196 gpm	272 gpm	

11	2794	C	A properly adjusted thermostatic expansion valve will have a constant valve opening under a condition of constant _____.	supply pressure	suction pressure	refrigerant superheat	compressor speed	
11	2795	B	Which of the listed item numbers represents the device specifically termed the "heat exchanger" of the refrigeration system shown in the illustration?	6	13	18	26	RA-0018
11	2796	C	If you have a simplex single acting reciprocating pump making 150 strokes/minute, with a 5" diameter cylinder, a 4" stroke and operating with 97% volumetric efficiency, what is the capacity of this pump?	49 gpm	99 gpm	25 gpm	32 gpm	
11	2797	D	If you have a simplex single acting reciprocating pump making 200 strokes/minute, with a 5" diameter cylinder, a 7" stroke and operating with 77% volumetric efficiency, what is the capacity of this pump?	92 gpm	180 pm	183 gpm	46 gpm	
11	2798	B	In order to recognize the amount of anchor chain paid out, specific portions of the chain are color coded and wrapped with wire. The third shot of chain should have _____.	three turns of wire wrapped around the detachable link	three turns of wire wrapped around the stud of the third link on each side of the detachable link	three turns of wire wrapped around the stud of the link on each side of the detachabale link	one turn of wire wrapped around the stud of the third link on each side of the detachable link	
11	2799	C	Liquid recovery alone will typically remove the total refrigerant charge from a low pressure system up to _____.	50%	60%	70%	75%	
11	2800	A	If you have a simplex single acting reciprocating pump making 120 strokes/minute, with a 5" diameter cylinder, a 6" stroke and operating with 81% volumetric efficiency, what is the capacity of this pump?	25 gpm	50 pm	59 gpm	96 gpm	

11	2801	B	If you have a duplex double acting reciprocating pump making 100 strokes/minute, with a 6" diameter cylinder, a 11" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump?	61 gpm	242 gpm	407 gpm	121 gpm	
11	2802	C	If you have a duplex double acting reciprocating pump making 100 strokes/minute, with a 6" diameter cylinder, a 12" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump?	529 gpm	132 gpm	264 gpm	66 gpm	
11	2803	C	If you have a duplex single acting reciprocating pump making 120 strokes/minute, with a 5" diameter cylinder, a 5" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump?	15 gpm	38 gpm	47 gpm	61 gpm	
11	2804	D	Hot gas bypass is one of the methods used to _____.	relieve excessive compressor head pressure	produce flash gas at the expansion valve	reduce flooding of the receiver at low loads	defrost the evaporator coils	
11	2805	C	Which of the listed item numbers represents the liquid line solenoid valve for the refrigeration system shown in the illustration?	22	27	29	17	RA-0018
11	2806	C	In order to recognize the amount of anchor chain paid out, specific portions of the chain are color coded and wrapped with wire. The second shot of the chain is painted _____.	white on the detachable link	red for two links on either side of the detachable link	white for two links on either side of the detachable link	red on the detachable link	
11	2807	D	The rupture disc used on low pressure refrigerant containers is set for _____.	1 psig	5 psig	10 psig	15 psig	
11	2809	A	If a block and tackle arrangement were rigged as shown in figure "D" in the illustration, the amount of force "P" required to hold the 423 pound load stationary would be _____.	141 lbs.	156 lbs.	169 lbs.	185 lbs.	GS-0110

11	2810	A	If you have a duplex single acting reciprocating pump making 200 strokes/minute, with a 3" diameter cylinder, a 4" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump?	23 gpm	11 gpm	40 gpm	46 gpm	
11	2811	B	If you have a duplex single acting reciprocating pump making 100 strokes/minute, with a 6" diameter cylinder, a 7" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump?	39 gpm	77 gpm	154 gpm	105 gpm	
11	2812	C	If you have a simplex single acting reciprocating pump making 110 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump?	51 gpm	61 gpm	31 gpm	123 gpm	
11	2813	D	In order to recognize the amount of anchor chain paid out, specific portions of the chain are color coded and wrapped with wire. The first shot of chain is painted _____.	white on the detachable link and red on each link to either side of the detachable link	white on the detachable link and white on each link to either side of the detachable link	red on the detachable link and red on each link to either side of the detachable link	red on the detachable link and white on each link to either side of the detachable link	
11	2814	A	Which of the precautions listed should be taken before opening any part of a refrigeration system?	Make certain that a positive pressure exists in the system to prevent entrance of moisture.	Find the leaks in the system with a Halide torch.	Set the high pressure cutout on manual to prevent automatic starting.	Use the hot gas defrost line to remove frost on coils.	
11	2815	D	Which of the item numbers listed represents the accumulator of the refrigeration system shown in the illustration?	8	12	13	20	RA-0018
11	2816	B	During normal operation, how is most of the refrigerant released to the atmosphere from low pressure systems?	through water-side systems	through the purge unit	through a leaking rupture disk	through the compressor shaft seal	

11	2817	C	A short weighted hose is attached to the end of the P-tank fixed discharge line on board a supply boat to _____.	prevent accidental back flow of dry bulk material	maintain a non-vibrating delivery rate	prevent dry material from being discharged on deck	All of the above	
11	2819	B	A high reading is only indicated at the salinity cell labeled "6" shown in the illustration. This would be the probable result of _____.	a minor tube leak in the distillate condenser in item "III"	a faulty cell at this location	the compensating temperature is set too low for this cell location	All of the above	GS-0053
11	2820	A	As shown in the illustration, a section of standard weight seamless steel pipe, has an external diameter of 6.6 inches. When the pipe, is bent into a 90 degree turn, the length of the outside edge of the curve "A-B" will exceed the length of the inside edge of the curve "C-D" by _____.	10.367 inches	13.006 inches	15.367 inches	19.059 inches	GS-0108
11	2822	D	The lathe tool shown as figure "O" in the illustration is commonly used for _____.	cutting acme threads	left hand side facing	right hand turning	grooving	GS-0090
11	2823	A	Minor repairs may be performed on low pressure refrigerant systems without recovering the refrigerant charge if the pressure in the system is raised to atmospheric. How may this be accomplished?	heat the refrigerant	pressurize the system with nitrogen	charge the system until it is completely filled with liquid refrigerant	open the system vent to the atmosphere and allow the pressure to equalize	
11	2824	B	Before charging a refrigeration unit, the refrigerant charging lines should be _____.	flushed with clean refrigerant oil	purged with the refrigerant	washed with an ammonia and alcohol solution	grounded to the compressor	
11	2825	A	Which of the numbers listed represents the main component of the refrigeration system, shown in the illustration, used to determine whether the unit is to operate in the cooling or heating mode?	5	14	29	30	RA-0018

11	2826	A	Under what conditions would the oily-water separator system illustrated fail to effectively process a mixture of oily-water?	When the oily-water mixture is an emulsion the effectiveness of the separator is greatly reduced.	Without detergents the effectiveness of the separator is greatly reduced.	When there are small air leaks in the discharge piping, the effectiveness of the separator will greatly reduced.	When the oily-water separator is in the process mode it will effectively handle emulsions.	GS-0113
11	2827	C	In a low pressure refrigeration system, excessive running of the purge system generally indicates which probable condition?	faulty purge system vent valve	overcharged system	system leaks	high ambient temperature	
11	2828	D	If you have a duplex single acting reciprocating pump making 100 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump?	28 gpm	110 gpm	38 gpm	55 gpm	
11	2829	D	A graphite additive type grease would be effectively used for lubricating _____. I. a topping lift winch bearing II. a fuel oil service pump bearing	I only	II only	Both I and II	Neither I nor II	
11	2830	B	If you have a duplex single acting reciprocating pump making 100 strokes/minute, with a 6" diameter cylinder, a 8" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump?	44 gpm	88 gpm	157 gpm	176 gpm	
11	2831	A	Design characteristics of lubricating oil sump tanks include _____.	installation of baffles to prevent excessive sloshing of oil	sufficient capacity to contain all the lube oil in the system except for the contents of the gravity tank	cooling coils made of welded seamless steel pipe	insuring the bottom of the sump is integral with the shell plating	

11	2832	A	Excessive moisture being collected in the purge unit of a low pressure refrigeration system could indicate which probable condition?	leaking condenser or chiller tubes	low efficiency purge unit	dryer core needs replacement	improper charging of refrigerant	
11	2833	C	If a block and tackle arrangement were rigged as shown in figure "D" in the illustration, the amount of force "P" required to hold the 423 pound load stationary would be _____.	118 lbs.	127 lbs.	141 lbs.	150 lbs.	GS-0110
11	2834	B	Low side passive charging of a refrigeration system may be speeded up by _____.	warming the service cylinder with a torch	warming the service cylinder with hot water	inverting the service cylinder	inclining the service cylinder	
11	2835	C	Which of the numbers listed represents the equalizing line shown in the illustration?	4	11	16	19	RA-0018
11	2836	B	In a refrigeration system, what is meant by the term 'high efficiency purge unit?'	Those purge units which discharge the highest percentage of refrigerant with the air being removed.	Those purge units which discharge very little refrigerant with the air being removed.	Those purge units which draw very little electrical power.	Those purge units which need the least amount of on-going maintenance.	
11	2837	A	A short, weighted hose is attached to the end of the P-tank fixed discharge line on board a supply boat to _____.	keep the end of the hose under water and prevent dust from blowing on the boat	maintain a low discharge flow rate	keep the end of the fixed discharge line from excessively vibrating	All of the above	
11	2838	A	If your vessel burns 5 tons of fuel per hour at 23 knots, how many tons per hour will it burn at 18 knots?	2.4 tons	3.9 tons	3.1 tons	3.3 tons	
11	2839	D	If you have a duplex double acting reciprocating pump making 100 strokes/minute, with a 7" diameter cylinder, a 13" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump?	672 gpm	195 gpm	970 gpm	390 gpm	

11	2840	A	If you have a duplex double acting reciprocating pump making 100 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump?	308 gpm	154 gpm	77 gpm	840 pm	
11	2841	B	If you have a duplex double acting reciprocating pump making 100 strokes/minute, with a 6" diameter cylinder, a 13" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump?	143 gpm	286 gpm	726 gpm	672 gpm	
11	2842	C	If you have a duplex single acting reciprocating pump making 150 strokes/minute, with a 4" diameter cylinder, a 6" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump?	23 gpm	34 gpm	47 gpm	93 gpm	
11	2843	B	What must be done to use standard leak detection methods on a low pressure refrigeration system?	lower the pressure in the system below atmospheric	raise the pressure in the system above atmospheric	cool the refrigerant	add HCFC-22 to the system	
11	2844	C	When using the test set up shown in the illustrated to find a leak in an evaporator coil, it is important to remember that _____.	the flame will turn blue in the presence of a refrigerant	a large flame is more sensitive than a small flame	The refrigerant is heavier than air and will be detected below the leak	all of the above	RA-0004
11	2845	A	Which of the item numbers listed represents the device used to activate the three way valve of the refrigeration system shown in the illustration?	24	27	29	30	RA-0018
11	2847	D	If you have a duplex double acting reciprocating pump making 180 strokes/minute, with a 4" diameter cylinder, a 12" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump?	105 gpm	314 gpm	52 gpm	209 gpm	

11	2848	D	While the illustrated system is operated at sea the strainer in line "4" becomes fouled, this will result in _____.	a significant reduction in distillate production	pump "K" becoming vapor bound	the temperature regulated by "L" difficult to maintain	nothing unusual for the area of operation indicated	GS-0053
11	2851	D	Which of the figures in illustration GS-0080 would be used in conjunction with figure "C" in illustration GS-0015?	figure A	figure D	figure F	figure K	GS-0080
11	2853	B	As shown in the illustration, a section of standard weight, seamless steel pipe, has an external diameter of 5.2 inches. When the pipe, is bent into a 90 degree turn, the length of the outside edge of the curve "A-B" will exceed the length of the inside edge of the curve "C-D" by _____.	7.980 inches	8.168 inches	13.168 inches	16.127 inches	GS-0108
11	2854	C	A quick method used to test a water cooled condenser for refrigerant leaks is to test the _____.	cooling water for proper pH	receiver for water content	air vents on the condenser heads with a halide torch	condenser tubes hydrostatically	
11	2855	B	Which of the item numbers listed represents the device used to prevent refrigerant flow into the 'drip pan heater' during normal cooling periods of the refrigeration system shown in the illustration?	24	27	29	30	RA-0018
11	2856	D	If you have a duplex single acting reciprocating pump making 150 strokes/minute, with a 5" diameter cylinder, a 4" stroke and operating with 97% volumetric efficiency, what is the capacity of this pump?	25 gpm	99 gpm	32 gpm	49 gpm	
11	2857	C	Why is a short, weighted hose attached and secured to the end of the fixed discharge line from a supply boat P-tank?	To keep the end of the hose from lifting off the deck of the supply boat.	To keep down the discharge flow rate.	To prevent injury when pressurized air discharges from the open end of the hose	All of the above	

11	2858	A	If you have a duplex single acting reciprocating pump making 200 strokes/minute, with a 5" diameter cylinder, a 7" stroke and operating with 77% volumetric efficiency, what is the capacity of this pump?	92 gpm	46 gpm	180 gpm	183 gpm	
11	2859	C	If your vessel burns 6 tons of fuel per hour at 22 knots, how many tons per hour will it burn at 17 knots?	4.6 tons	3.9 tons	2.8 tons	1.7 tons	
11	2860	C	If you have a duplex double acting reciprocating pump making 100 strokes/minute, with a 6" diameter cylinder, a 10" stroke and operating with 80% volumetric efficiency, what is the capacity of this pump?	98 gpm	272 gpm	196 gpm	49 gpm	
11	2861	A	All watertight doors and watertight hatches on small passenger vessels of less than 100 gross tons are required to be marked in letters _____.	of at least 1-inch, 'watertight door-close in an emergency' or 'watertight hatch-close in emergency'	not to exceed 1-inch 'watertight door-close in emergency' or 'watertight hatch-close in emergency'	of at least 1-inch, 'emergency exit, keep clear'	not to exceed 1-inch, 'emergency exit, keep clear'	
11	2862	D	If you have a duplex double acting reciprocating pump making 150 strokes/minute, with a 4" diameter cylinder, a 6" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump?	12 gpm	25 gpm	50 gpm	93 gpm	
11	2863	B	If valve "4", shown in the illustration, does not open when the oily-water separator shifts into the oil discharge mode, which of the following statements describes what would occur?	Backflush water would cause the oil accumulated in the upper section of the tank to be forced back into the bilge spaces.	The separator operation would stall as a result of oil remaining on the lower probe of item "6".	The separator operation would stall do to the presence of water at the upper probe of item "6".	The separator operation would continue as valve "4" is only used during the remote manual mode.	GS-0153

11	2864	C	Which of the processes listed would be the most satisfactory method to use to lower the humidity of the air being circulated by an air conditioning system?	Cooling the air to a temperature just above dew point.	Heating the air to a point at which moisture will boil off, then recooling it.	Cooling the air to a point below dew point, then reheating it.	Heating the air and then cooling it to a point below dew point.	
11	2865	D	Which of the listed pairs of numbered items provide the same function in the refrigeration system shown in the illustration?	24 & 30	18 & 26	2 & 23	3 & 21	RA-0018
11	2866	A	If you have a duplex double acting reciprocating pump making 170 strokes/minute, with a 4" diameter cylinder, a 6" stroke and operating with 96% volumetric efficiency, what is the capacity of this pump?	107 gpm	53 gpm	80 gpm	27 gpm	
11	2867	B	If you have a duplex double acting reciprocating pump making 150 strokes/minute, with a 5" diameter cylinder, a 4" stroke and operating with 97% volumetric efficiency, what is the capacity of this pump?	49 gpm	99 gpm	32 gpm	25 gpm	
11	2868	A	If the discharge valves on a refrigeration compressor are leaking slightly, the compressor will _____.	run continuously	not start	short cycle on the water low pressure switch	short cycle on the high pressure switch	
11	2869	A	In the illustration, the item labeled as '27' is _____. I. used to vent off air from the casing II. to supply sealing water to the stuffing box	I only	II only	Both I and II	Neither I nor II	GS-0012
11	2870	B	If a block and tackle arrangement were rigged as shown in figure "G" in the illustration, the amount of force "P" required to hold the 236 pound load stationary would be _____.	47 lbs.	59 lbs.	79 lbs.	94 lbs.	GS-0110
11	2871	D	According to the Regulations, all escape hatches and other emergency exits on small passenger vessels of less than 100 gross tons shall be marked on _____.	exterior side, in less than 2-inch letters 'watertight openning- keep clear'	exterior side only, in at least 2-inch letters 'emergency exit- keep clear'	both sides, in at least 2-inch letters 'watertight door- close in emergency'	both sides, in at least 2-inch letters 'emergency exit- keep clear'	

11	2872	C	If you have a duplex double acting reciprocating pump making 200 strokes/minute, with a 5" diameter cylinder, a 7" stroke and operating with 77% volumetric efficiency, what is the capacity of this pump?	46 gpm	92 gpm	183 gpm	180 gpm	
11	2873	D	If you have a simplex single acting reciprocating pump making 120 strokes/minute, with a 5" diameter cylinder, a 6" stroke and operating with 81% volumetric efficiency, what is the capacity of this pump?	25 gpm	59 gpm	50 gpm	99 gpm	
11	2874	B	A cargo hold has been determined to have a relative humidity of 80% and a dry bulb temperature of 85°F. When the hold is sealed and the dry bulb temperature decreases, the relative humidity in the space will _____.	decrease	increase	decrease to zero	remain unchanged	
11	2875	B	If you have a duplex double acting reciprocating pump making 200 strokes/minute, with a 3" diameter cylinder, a 4" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump?	11 gpm	46 gpm	23 gpm	40 gpm	
11	2876	C	If you have a duplex double acting reciprocating pump making 100 strokes/minute, with a 6" diameter cylinder, a 7" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump?	39 gpm	77 gpm	154 gpm	175 gpm	
11	2877	B	The hydraulic tubing installation shown as figure D is INCORRECT and will probably leak when in operation because the tubing _____.	will contract in diameter and expand in length under pressure	has no provision for eliminating strain by absorbing vibration	will stretch and overstress the male threads on the fitting	cannot flex at right angles to the pressure applied by the fluid because it is not properly twisted	GS-0065

11	2878	C	When a P-tank has been properly emptied, the tank pressure will immediately _____.	increase to 3-5 psi	decrease to 35-37 psi	decrease to 3-5 psi	increase to 35-37 psi	
11	2879	B	If your vessel burns 8 tons of fuel per hour at 15 knots, how many tons per hour will it burn at 19 knots?	12.8 tons	16.3 tons	10.6 tons	10.1 tons	
11	2880	A	If you have a simplex single acting reciprocating pump making 100 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump?	110 gpm	28 gpm	55 gpm	38 gpm	
11	2881	B	If you have a duplex double acting reciprocating pump making 110 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump?	31 gpm	123 gpm	61 gpm	51 gpm	
11	2882	C	If you have a duplex double acting reciprocating pump making 100 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump?	22 gpm	44 gpm	88 gpm	20 gpm	
11	2883	C	If your vessel burns 8 tons of fuel per hour at 15 knots, how many tons per hour will it burn at 20 knots?	11.7 tons	10.7 tons	19.0 tons	14.2 tons	
11	2884	C	The compressor used in an air-cooled air conditioning system is short cycling. A service check determines the suction pressure is above the normal cut-in point with an exceptionally high head pressure and high superheat at the evaporator. This is probably the result of a _____.	loosely fitted compressor drive belt	partially opened liquid service valve	reduction in condenser air flow (dirty condenser)	fully closed discharge service valve	

11	2885	D	When repairing a refrigeration system, a swedge would be used to carry out which of the following operations?	Swedges are used to remove any sweated edges formed on the tubing while soldering.	Swedges are used during the breaking-in of refrigeration compressors and drive motors.	A swedge is no longer used with repairing refrigeration systems due to progressive changes in the tool industry.	Swedges can be used to expand an end of one tube to fit onto a tube of the same external diameter.	
11	2886	A	If you have a duplex double acting reciprocating pump making 100 strokes/minute, with a 7" diameter cylinder, a 9" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump?	270 gpm	67 gpm	135 gpm	223 gpm	
11	2887	B	If you have a duplex double acting reciprocating pump making 100 strokes/minute, with a 7" diameter cylinder, a 11" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump?	82 gpm	330 gpm	165 gpm	407 gpm	
11	2888	B	If you have a duplex double acting reciprocating pump making 100 strokes/minute, with a 7" diameter cylinder, a 12" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump?	90 gpm	180 gpm	360 gpm	529 gpm	
11	2889	D	One of the primary steps in assisting someone who has been overcome by ammonia vapors is to _____.	loosen all clothing	provide the victim with smelling salts	rinse the affected area with water	give the patient plenty of fresh air	
11	2890	D	If you have a duplex single acting reciprocating pump making 120 strokes/minute, with a 5" diameter cylinder, a 6" stroke and operating with 81% volumetric efficiency, what is the capacity of this pump?	25 gpm	99 gpm	59 gpm	50 gpm	
11	2891	A	The lubrication of a precision high speed bearing depends upon a system that produces _____.	adequate quantity at sufficient pressure	high detergent oil with pressure additives	constant viscosity lubrication	a minimum of 15 psi to all parts of the system	

11	2892	B	If you have a simplex single acting reciprocating pump making 110 strokes/minute, with a 5" diameter cylinder, a 10" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump?	21.3 gpm	42.5 gpm	46.3 gpm	85 gpm	
11	2893	C	If you have a simplex single acting reciprocating pump making 140 strokes/minute, with a 4" diameter cylinder, a 5" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump?	36 gpm	45 gpm	18 gpm	72 gpm	
11	2894	C	In a two stage centrifugal air conditioning system, the liquid refrigerant passes through the condenser directly to the _____.	evaporator	chiller	economizer	expansion valve	
11	2895	D	If you have a simplex single acting reciprocating pump making 120 strokes/minute, with a 3" diameter cylinder, a 4" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump?	14 gpm	28 gpm	19 gpm	7 gpm	
11	2896	A	If you have a simplex single acting reciprocating pump making 110 strokes/minute, with a 6" diameter cylinder, a 7" stroke and opperating with 91% volumetric efficiency, what is the capacity of this pump?	43 gpm	86 gpm	100 gpm	172 gpm	
11	2897	D	If a refrigeration compressor were short cycling on the low pressure cutout switch, the cause might be that the _____.	system was overcharged with refrigerant	system was low on oil	suction valves were leaking slightly	system was low on refrigerant	
11	2898	C	When all of the dry bulk material has been delivered from a P-tank, it should be blown out by repressurizing to _____.	5-10 psi	10-15 psi	25-30 psi	40-50 psi	

11	2899	B	If you have a simplex single acting reciprocating pump making 110 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump?	51 gpm	31 gpm	61 gpm	123 gpm	
11	2900	C	If you have a simplex single acting reciprocating pump making 110 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump?	33 gpm	49 gpm	25 gpm	98 gpm	
11	2901	A	Considering equal capacities, which refrigeration system can employ the smallest compressor?	Ammonia	Carbon Dioxide	Dichlorodifluoromethane	Monochlorodifluoromethane	
11	2902	C	If a block and tackle arrangement were rigged as shown in figure "G" in the illustration, the amount of force "P" required to hold the 254 pound load stationary would be _____.	13 lbs.	43 lbs.	64 lbs.	102 lbs.	GS-0110
11	2903	D	If you have a simplex single acting reciprocating pump making 130 strokes/minute, with 5" diameter cylinder, a 8" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump?	82 gpm	132 gpm	164 gpm	41 gpm	
11	2904	C	The primary purpose of the thermostatic expansion valve as used in most refrigeration plants is to _____.	regulate refrigerant passage through the solenoid valve	ensure that liquid refrigerant returning to the compressor has the proper superheat	maintain a constant degree of superheat at the evaporator coil outlet	maintain constant evaporator coil pressure independent of suction pressure variations	

11	2905	C	In a refigeration system, once the compound gage manifold lines are attached to the service connections, you should ascertain that the valves on the gage manifold are closed, and then _____.	open the discharge valve service port by closing the service valve	continue to backseat the discharge service valve by turning it clockwise	open the discharge valve service port by closing the service valve approximately 1/4 to 1/2 of a turn	open only the valve connected to the discharge service fitting on the outlet of the king valve	
11	2906	A	If you have a simplex single acting reciprocating pump making 110 strokes/minute, with a 6" diameter cylinder, a 9" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump?	55 gpm	75 gpm	151 gpm	303 gpm	
11	2907	D	If R-502, which is a mixture comprised of 48.8% R-22 and 51.2% R-115, is recovered from a refrigeration system, it must be placed in a recovery tank containing _____.	either R-22 or R-115	R-22 only	R-115 only	R-502 only	
11	2908	B	If you have a simplex single acting reciprocating pump making 110 strokes/minute, with a 8" diameter cylinder, a 11" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump?	240 gpm	120 gpm	329 gpm	479 gpm	
11	2909	C	If you have a simplex single acting reciprocating pump making 110 strokes/minute, with a 6" diameter cylinder, a 12" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump?	225 gpm	113 gpm	74 gpm	56 gpm	
11	2910	D	If you have a simplex single acting reciprocating pump making 110 strokes/minute, with a 6" diameter cylinder, a 13" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump?	159 gpm	345 gpm	319 gpm	80 gpm	

11	2911	A	If you have a simplex single acting reciprocating pump making 110 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump?	86 gpm	172 gpm	343 gpm	400 gpm	
11	2912	B	If you have a simplex single acting reciprocating pump making 110 strokes/minute, with a 7" diameter cylinder, a 13" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump?	217 gpm	108 gpm	403 gpm	434 gpm	
11	2914	C	The primary purpose of the thermostatic expansion valve in a typical multi-box shipboard refrigeration system is to _____.	control the refrigerated space temperature	regulate the compressor suction pressure	regulate the amount of refrigerant superheat leaving the evaporator	control the refrigerant temperature entering the evaporator	
11	2915	C	When purging a gage manifold, which of the fittings listed is normally tightened last?	The hose fitting at the discharge valve is tightened last after purging the low pressure line.	The fittings at the discharge and suction valves of the compressor are both closed simultaneously to prevent objective cross flows.	The hose fitting at the suction service valve is tightened last after purging the center connection.	The low pressure hose fitting at the gage manifold is the only fitting that is connected first and tightened last.	
11	2916	A	The lathe tools shown as figure "M" in the illustration are commonly known as _____.	forming tools	cutting-off tools	parting tools	universal turning tools	GS-0090
11	2917	C	If you have a simplex single acting reciprocating pump making 110 strokes/minute, with a 5" diameter cylinder, a 12" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump?	102 gpm	204 gpm	51 gpm	245 gpm	

11	2918	B	As soon as all of the pulverized material has been discharged from a P-tank, the tank should be _____.	vented and depressurized	repressurized and blown out with the discharge hoses disconnected	repressurize and blown out with the discharge hoses connected	allowed to stand empty, but pressurized until refilled	
11	2919	A	The prohibition against the venting of halogenated floro-carbon refrigerants to the atmosphere requires that, at a minimum, the refrigerant must be _____.	recovered	reclaimed	recycled	destroyed	
11	2922	D	If you have a duplex single acting reciprocating pump making 110 strokes/minute, with a 8" diameter cylinder, a 11" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump?	120 gpm	329 gpm	479 gpm	240 gpm	
11	2923	A	If you have a duplex single acting reciprocating pump making 120 strokes/minute, with a 5" diameter cylinder, a 12" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump?	113 gpm	56 gpm	225 gpm	270 gpm	
11	2924	C	One benefit of proper air circulation in a refrigerated cargo space is _____.	more temperature differential	increased moisture content	reduced slime and mold	increased density of the air	
11	2925	D	Valve "10" in the refrigeration system shown in the illustration is known to close effectively. The low side of the system is pumped down and the compressor is off. The suction pressure gage initially indicates a vacuum, but slowly increases to '0' psig. Which of the following statements describes the probable cause?	Compressor discharge valves are not sealing properly.	Condenser check valve, item "7" has a defective valve seat.	Heat exchanger, item "13" has an internal leak.	There is a small leak at the dehydrator fittings indicated by the presence of minute quantities of oil.	RA-0018

11	2926	C	As shown in the illustration, a section of standard weight, seamless steel pipe, has an external diameter of 4.6 inches. When the pipe, is bent into a 90 degree turn, the length of the outside edge of the curve "A-B" will exceed the length of the inside edge of the curve "C-D" by _____.	5.246 inches	6.113 inches	7.226 inches	7.435 inches	GS-0108
11	2927	B	If solenoid "A" illustrated is energized, the _____.	pump should reverse the direction of flow	cylinder should extend	pump should discharge directly to the resevoir	cylinder should retract	GS-0041
11	2928	A	If a block and tackle arrangement were rigged as shown in figure "G" in the illustration, the amount of force "P" required to hold the 294 pound load stationary would be _____.	74 lbs.	90 lbs.	98 lbs.	118 lbs.	GS-0110
11	2929	B	If you have a duplex single acting reciprocating pump making 110 strokes/minute, with a 6" diameter cylinder, a 13" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump?	80 gpm	161 gpm	319 gpm	345 gpm	
11	2930	C	If you have a duplex single acting reciprocating pump making 110 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump?	86 gpm	343 gpm	172 gpm	400 gpm	
11	2931	D	If you have a duplex single acting reciprocating pump making 110 strokes/minute, with a 7" diameter cylinder, a 13" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump?	108 gpm	434 gpm	403 gpm	217 gpm	

11	2932	A	If you have a duplex single acting reciprocating pump making 110 strokes/minute, with a 5" diameter cylinder, a 12" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump?	102 gpm	51 gpm	204 gpm	245 gpm	
11	2934	C	Which of the lettered items correctly identifies the parts of the refrigeration valve shown in the illustration?	A-front seat, C-back seat, and D-seal cap	D-front seat, E-normal outlet, and G-valve packing	A-seal cap, D-front seat, and F-gage connection	B-valve stem, C-front seat, and F-packing gland	RA-0008
11	2935	C	The refrigeration system shown in the illustration is pumped down and the compressor is cycled off. The compressor suction and discharge valves and valve "10" have been checked and found to be in good order. Which of the problems listed is indicated if the suction pressure rises rapidly from a vacuum to above atmospheric pressure?	There is a discernible hole in the suction piping.	The system contains excessive refrigerant.	Check valve, item '27' has acquired foreign matter preventing it from closing.	Dehydrator, item "12" is clogged and requires changing.	RA-0018
11	2936	B	If you have a duplex single acting reciprocating pump making 110 strokes/minute, with a 5" diameter cylinder, a 10" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump?	67 gpm	84 gpm	245 gpm	270 gpm	
11	2937	C	If you have a duplex single acting reciprocating pump making 110 strokes/minute, with a 5" diameter cylinder, a 10" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump?	23 gpm	42 gpm	85 gpm	179 gpm	
11	2938	D	If you have a simplex single acting reciprocating pump making 170 strokes/minute, with a 4" diameter cylinder, a 6" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump?	107 gpm	80 gpm	53 gpm	25 gpm	

11	2939	A	An example of a small refrigeration appliance identified as TYPE I, is _____.	A water cooler with four pounds of refrigerant	a cargo container refrigerant system containing 4.9 lbs of refrigerant.	a 25 ton air conditioning plant provided it does not meet the criteria for a TYPE II appliance.	each of the above answers is correct	
11	2940	A	If you have a simplex single acting reciprocating pump making 170 strokes/minute, with a 5" diameter cylinder, a 4" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump?	25 gpm	39 gpm	49 gpm	98 gpm	
11	2941	C	The purpose of nozzles in a liquid mud system is to_____.	aerate the mud to insure proper oxygen content	clean the mud from the bottom of the tank	circulate the mud to prevent barite from settling	Prevent barite from damaging the pump	
11	2942	B	If you have a simplex single acting reciprocating pump making 110 strokes/minute, with a 5" diameter cylinder, a 7" stroke and operating with 79% volumetric efficiency, what is the capacity of this pump?	52 gpm	26 gpm	72 gpm	103 gpm	
11	2943	C	If you have a duplex double acting reciprocating pump making 130 strokes/minute, with a 4" diameter cylinder, a 12" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump?	79 gpm	237 gpm	158 gpm	39 gpm	
11	2944	D	The high pressure cutout switch will stop the refrigeration centrifugal compressor when there is _____.	a stoppage of condenser cooling water flow	fouled condenser tubes	excessive air in the system	all of the above	

11	2945	D	The refrigeration system shown in the illustration has been operating in the cooling mode for twenty minutes and has not entered the programmed defrost period. Which of the following is indicated if the line marked '25' feels hot, even though the box temperature has been gradually decreasing?	Check valve, item '27' is leaking.	Drip pan heater, item '26' is no longer melting ice.	Solenoid valve, item "24" is operating correctly and is opened.	Three way valve, item "5" is not seating properly.	RA-0018
11	2946	C	If you have a duplex double acting reciprocating pump making 160 strokes/minute, with a 4" diameter cylinder, a 12" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump?	44 gpm	98 gpm	196 gpm	266 gpm	
11	2947	A	What three (3) types of drilling fluids can be transported by an OSV?	water based mud, oil based mud and completion fluids	salt water mud, fresh water mud and correction fluids	offshore mud, inland mud and dry chemicals	barite, oil and zinc bromide	
11	2948	B	The operation of a P-tank depends upon _____.	liquifying the dry bulk material	directing the bulk material to a central discharge point within the pressure vessel	providing a central suction point to the liquid mud pump	All of the above	
11	2952	C	Which of the following steps should be taken before taking on a load of liquid mud for transport to a MODU?	Flood the tanks with carbon dioxide and test product with an explosimeter (gas detector)	Test a sample to insure that the emulsifying amines do not exceed a STEL of 25 ppm.	Insure that the sea chest valve is closed and not leaking.	All of the above.	
11	2953	D	If a block and tackle arrangement were rigged as shown in figure "G" in the illustration, the amount of force "P" required to hold the 334 pound load stationary would be _____. (See illustration GS-0110)	54 lbs.	61 lbs.	77 lbs.	84 lbs.	GS-0110

11	2954	D	An economizer, or heat interchanger, is installed in a refrigeration system to _____.	reduce the possibility of sweating of the suction line	reduce the temperature of liquid refrigerant prior to entering the expansion valve	reduce the possibility of liquid refrigerant flooding back to the compressor	all of the above	
11	2955	D	The refrigeration system shown in the illustration is operating in the cooling mode. The discharge head pressure is slightly above normal and the suction pressure is lower than normal, with the ball in the sight glass floating high. Which of the following indicates the probable cause?	There is a restriction at the three way valve.	There is a restriction at the pilot valve controlling the three way valve.	The condenser check valve is not operating correctly causing the condenser coils to become flooded.	There is a restriction in the liquid line.	RA-0018
11	2956	B	If you have a simplex single acting reciprocating pump making 180 strokes/minute, with a 4" diameter cylinder, a 12" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump?	209 gpm	52 gpm	105 gpm	314 gpm	
11	2957	B	Federal regulations permit refrigerant to be released to the atmosphere under which conditions?	When testing a system for leaks using R-12 and nitrogen.	When release is considered 'De Minimis'.	When adding oil to a compressor.	During replacement of a compressor.	
11	2958	C	If you have a simplex single acting reciprocating pump making 140 strokes/minute, with a 5" diameter cylinder, a 6" stroke and operating with 83% volumetric efficiency, what is the capacity of this pump?	59 gpm	71 gpm	30 gpm	119 gpm	
11	2959	D	If it is necessary to prevent the rudder from moving while a repair is made on the steering system using the illustrated actuator _____.	screw in the locking pin, item "J"	tighten the locking screws in item "S"	tighten the locking pins, item "H" at each position of item "I" to keep the rudder from swinging	secure the valves in the supply and return lines	GS-0116

11	2960	B	If valve 'V2A' in the illustration does not open when the oily-water separator shifts into the oil discharge mode, which of the following statements describes what would occur?	Backflush water would cause the oil accumulated in the upper section of the tank to be forced back into the bilge spaces.	The separator operation would stall as a result of oil remaining on the longer probe of item "S".	The separator operation would stall do to the presence of water at the shorter probe of item "S".	The separator operation would continue as valve 'V4' is only used during the remote manual mode.	GS-0113
11	2961	D	If you have a duplex single acting reciprocating pump making 180 strokes/minute, with a 4" diameter cylinder, a 5" stroke and operating with 96% volumetric efficiency, what is the capacity of this pump?	59 gpm	24 gpm	94 gpm	47 gpm	
11	2962	B	In the hydraulic schematic illustrated, the pump symbol indicates the use of a _____.	constant flow gear type pump	constant flow pump of indefinite construction	constant flow screw type pump	bi-directional rotating constant flow pump	GS-0041
11	2964	C	The amount of refrigerant in a storage cylinder is measured by _____.	pressure	volume	weight	temperature	
11	2965	D	Which of the conditions listed would indicate the refrigeration system shown in the illustration is insufficiently charged?	The position of the floating ball in the receiver tank sight glass.	A suction pressure whose saturation temperature is equal to the existing box temperature.	The existence of, or the ability to develop, a 150 psi head pressure.	All of the above.	RA-0018
11	2966	C	If you have a duplex single acting reciprocating pump making 180 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump?	626 gpm	134 gpm	268 gpm	537 gpm	

11	2967	D	Newly developed refrigerants, used to reduce stratospheric ozone depletion, are sometimes refered to as azeotropic. This means that the resulting liquid _____.	will condense at a temperature lower than the boiling point of the componant withthe lowest boiling point	boils at a temperature equal to the boiling point of the component with the lowest boiling point	will condense at a temperature equal to the highest condensation point of the component with a condensation point equal to any one of the components	boils at a temperature independent of any individual components in the mixture	
11	2968	A	The operation of a P-tank depends upon _____.	fluidizing the dry bulk material	creating a liquified barite slurry	directing the material to the air outlet	All of the above	
11	2969	A	When checking the level of a fuel oil tank using a pneumercator, the initial reading obtained can be quickly verified by _____.	repeating the process and getting the same reading again	sounding the tank with a tape coated with a fuel indicating paste	a gauge reading of zero when the control handle is in the purge position	a gauge reading equal to supply air pressure when the control handle is in the purge position	
11	2970	D	If you have a duplex double acting reciprocating pump making 110 strokes/minute, with a 5" diameter cylinder, a 10" stroke and operating with 83% volumetric efficiency, what is the capacity of this pump?	39 gpm	67 gpm	135 gpm	155 gpm	
11	2971	D	If you have a duplex single acting reciprocating pump making 130 strokes/minute, with a 3" diameter cylinder, a 5" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump?	30 gpm	9 gpm	36 gpm	18 gpm	
11	2972	A	In the illustrated system, what pressure will be indicated on the gauge if the load (x) is 8000 lbs and the piston area is 10 sq. in?	800 psi	8,000 psi	80,000 psi	80 psi	GS-0062
11	2973	C	If solenoid "A" of the valve illustrated is energized, the cylinder will _____.	extend with rate of movement controlled	retract with rate of movement controlled	extend with rate of movement uncontrolled	retract with rate of movement uncontrolled	GS-0041

11	2974	B	Dehydrators are usually located in the liquid line of refrigeration systems in order to _____.	remove oil from the refrigerant	prevent icing of the expansion valve	reduce compressor discharge line sweating	prevent liquid slugging in the suction line	
11	2975	D	The suction pressure of the refrigeration system shown in the illustration is abnormally low, with a normal discharge pressure. Which of the following statements describes the probable cause and corrective action?	Excessive refrigerant is circulating within the system; bleed excess to the atmosphere.	Filter drier is too large for the system; replace with proper size.	Compressor check valves are leaking; replace only the damaged valves.	Moisture is frozen in the expansion valve; thaw valve and replace drier.	RA-0018
11	2976	D	As shown in the illustration, a section of standard weight, seamless steel pipe, has an external diameter of 3.8 inches. When the pipe, is bent into a 90 degree turn, the length of the outside edge of the curve "A-B" will exceed the length of the inside edge of the curve "C-D" by _____.	1.097 inches	1.571 inches	4.712 inches	5.969 inches	GS-0108
11	2977	D	With regards to the illustrated rudder, the pivot point and connection to the vessel is provided by _____.	rudder stock	stern post	clevis post	gudgeon and pintle	GS-0131
11	2978	B	The compressor in figure 4, if permitted to operate as illustrated will _____.	lose its volumetric efficiency	damage the bearings of the motor	trip the breaker when being restarted for the first time after replacing the belts	result in a constant enlargement of the clearance expansion volume	GS-0159
11	2979	D	The direction and rate of rotation for the cab in the hydraulic crane circuit shown, is controlled by the _____.	variable stroke pump (item #3)	main pump (item #13)	control valve (item #1)	manual control valve (item #10)	GS-0161
11	2980	D	The wire rope drum used in the illustrated hydraulic crane circuit is prevented from accidentally paying out by _____.	slightly shifting the hoist valve into position "I" to hold the load in a steady position	the installation of a braking valve in line "K" to the hydraulic motor	the use of a spring set, electric solenoid released brake	components labeled 4 and 5	GS-0161

11	2981	B	If solenoid "B" of the valve illustrated is energized, the cylinder will _____.	extend with rate of movement controlled	retract with rate of movement controlled	extend with rate of movement uncontrolled	retract with rate of movement uncontrolled	GS-0041
11	2982	B	If a block and tackle arrangement were rigged as shown in figure "G" in the illustration, the amount of force "P" required to hold the 362 pound load stationary would be _____.	88 lbs.	91 lbs.	121 lbs.	145 lbs.	GS-0110
11	2983	A	If you have a duplex single acting reciprocating pump making 130 strokes/minute, with a 5" diameter cylinder, a 4" stroke and operating with 96% volumetric efficiency, what is the capacity of this pump?	42 gpm	34 gpm	21 gpm	85 gpm	
11	2984	B	A liquid line solenoid valve controls refrigerant flow to the evaporator by _____.	throttling the refrigerant	fully opening or closing	sensing the superheat in the tail coil	sensing the temperature in the liquid line	
11	2985	A	Which of the following conditions would indicate that the drier of the refrigeration system shown in the illustration became restricted and required replacement?	Normal discharge pressure with an abnormally low suction pressure.	Frosting at the outlet of the drier and an excessively high suction pressure.	Frosting at the outlet of the drier and frosting at the three way valve.	Suction pressure low with a normal discharge pressure.	RA-0018
11	2986	A	If you have a duplex double acting reciprocating pump making 110 strokes/minute, with a 5" diameter cylinder, a 12" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump?	204 gpm	102 gpm	245 gpm	51 gpm	
11	2987	A	The check valve and variable orifice shown in the illustration are provided as a single unit and is typically known as a _____.	restrictor valve	counter balance valve	unloading valve	sequence valve	GS-0041
11	2988	C	The operation of a P-tank depends upon _____.	moving the dry barite with a liquid mud pump	using nozzles to recirculate the dry bulk material	aerating the barite	All of the above	

11	2989	A	If you have a duplex single acting reciprocating pump making 180 strokes/minute, with a 3" diameter cylinder, a 4" stroke and operating with 97% volumetric efficiency, what is the capacity of this pump?	21 gpm	28 gpm	11 gpm	43 gpm	
11	2990	D	If you have a simplex single acting reciprocating pump making 190 strokes/minute, with a 3" diameter cylinder, a 12" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump?	126 gpm	63 gpm	251 gpm	31 gpm	
11	2991	C	The amount of HCFC-123 in a storage cylinder is measured by _____.	saturation pressure	volume	weight	saturation temperture	
11	2992	C	The discharge valve of pump "O" in the system illustrated is only opened by 25%, this will result in _____.	a reduction in distillate purity	the pump becoming vapor bound	valve "S" being actuated and dumping to the bilges after a few hours of operation	nothing unusual for the type of operation indicated	GS-0053
11	2993	C	If oil under pressure is supplied to the area noted as "N" on the vane in the illustration _____.	"O" will be hydraulically locked in place even though oil is returned to the main pump from the area between "M" and "I"	"O" will rotate clockwise as oil is returned from the area between "M" and "I"	"O" will rotate counter-clockwise as oil is returned from the area between "M" and "I"	"Q" will rotate counter-clockwise as oil is returned from the area between "M" and "I"	GS-0116
11	2994	A	The lubrication oil in the sump of a secured refrigeration compressor is heated to _____.	reduce absorption of refrigerant by the oil	prevent refrigerant vaporization	remove entrained water	remove wax and gum	

11	2995	B	An excessive amount of oil is circulating throughout the refrigeration system shown in the illustration. Which of the following statements would indicate this improper operating condition?	The oil p.p.m. sensor, device '30' would initiate an electronic signal.	The suction pressure would be low, with the discharge pressure normal and an associated lack of space cooling.	All pressures would be normal, but the box temperature would be above setpoint.	The three way valve and the thermostatic expansion valve would each have a tendency to operate more efficiently due to the reduction of internal frictional forces.	RA-0018
11	2996	B	If you have a duplex single acting reciprocating pump making 150 strokes/minute, with a 5" diameter cylinder, a 7" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump?	119 gpm	85 gpm	42 gpm	170 gpm	
11	2999	A	In the circle illustrated, the circumference is 56.52 inches. What is the area of the shaded portion?	23.1 square inches	27.6 square inches	21.7 square inches	43.3 square inches	GS-0134
11	3000	B	If you have a duplex single acting reciprocating pump making 140 strokes/minute, with a 4" diameter cylinder, a 5" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump?	45 gpm	36 gpm	18 gpm	72 gpm	
11	3001	D	When the insulation breaks down within a metal encased, portable, electric tool, _____.	added safety features are built into the receptacle to allow continued use of the tool	care should be taken to insert the plug correctly when energizing the tool	you should stand on a grounded deck plate before energizing the tool	line voltage may be placed on the tool casing making it dangerous to operate	
11	3004	B	The individual box temperatures of a multibox refrigeration system are controlled by _____.	expansion valves	solenoid valves	back-pressure valves	regulation of the cooling water	

11	3005	C	A refrigeration container is fitted with a cooling system similar to the one shown in the illustration. The suction pressure drops rapidly just after the compressor is started. Although the evaporator coil is warm, frost is forming at the expansion valve outlet. Which of the following statements describes the most probable cause and the corrective action to be taken?	There is a shortage of refrigerant requiring an immediate charge.	The three way valve has become lodged in the mid position requiring prompt disassembly and cleaning.	The power element of the expansion valve has lost its charge due to a break in the capillary tube; therefore, it is necessary to change the power element.	These start-up characteristics are normal and no additional actions are necessary.	RA-0018
11	3006	D	Acetylene should never be used at pressures in excess of 15 psig because the _____.	acetylene cylinders have a maximum allowable pressure of 15 psig	fusible plug will blow out	relief valve will lift	slightest shock could cause an explosion	
11	3007	C	If you have a duplex single acting reciprocating pump making 170 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 97% volumetric efficiency, what is the capacity of this pump?	84 gpm	50 gpm	101 gpm	202 gpm	
11	3010	D	In the circle illustrated, the circumference is 157.6 inches. What is the area of the shaded portion?	394.0 square inches	168.5 square inches	337.0 square inches	179.6 square inches	GS-0134
11	3011	C	Oil is supplied to the illustrated steering gear _____.	through flexible hydraulic hoses via the connection ports located in the top surface of "O"	via the connections indicated as "J"	through high pressure piping at "A" and then internal ports provided in the housing assembly "U"	via hydraulic hoses connected to the orifices in "B"	GS-0116
11	3012	C	If you have a duplex single acting reciprocating pump making 120 strokes/minute, with a 3" diameter cylinder, a 4" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump?	19 gpm	7 gpm	14 gpm	28 gpm	

11	3013	A	A 'P-tank', as used aboard oilfield supply boats is _____.	a pressurized vessel designed to carry dry pulverized materials	a tank which is used to store compressed air at 100 psi	a pneumatically operated tank used to transport liquid drill mud	All of the above	
11	3014	C	Water regulating valves are installed to vary the water flow through the water cooled refrigeration condensers in response to _____.	compressor speed	compressor discharge temperature	compressor discharge pressure	condenser discharge temperature	
11	3015	D	The three way valve of the refrigeration system shown in the illustration leaks internally while the system is in the cooling mode. Which of the following statements indicates this condition?	Low discharge pressure with an associated low suction pressure.	Higher than normal condenser air outlet temperature with a higher than normal suction temperature.	The inability of the unit to properly pump down the high side.	Low discharge pressure and a normal or high suction pressure.	RA-0018
11	3016	A	If a block and tackle arrangement were rigged as shown in figure "G" in the illustration, the amount of force "P" required to hold the 378 pound load stationary would be _____.	95 lbs.	119 lbs.	126 lbs.	151 lbs.	GS-0110
11	3017	B	If you have a duplex single acting reciprocating pump making 150 strokes/minute, with a 6 inch diameter cylinder, a 4 inch stroke and operating with 95% volumetric efficiency, what is the capacity of this pump?	140 gpm	70 gpm	35 gpm	20 gpm	
11	3018	C	The wire rope drum used in the illustrated hydraulic crane circuit is prevented from accidentally paying out by _____.	using a bi-directional, variable stroke, hydraulic motor	a counter balance valve similar to that used in the boom circuit	the use of a spring set, hydraulically released brake and a braking valve	barely shifting valve #8 into envelope #"1"	GS-0161

11	3019	D	If you have a duplex single acting reciprocating pump making 150 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump?	47 gpm	35 gpm	140 gpm	70 gpm	
11	3022	A	If you have a simplex single acting reciprocating pump making 190 strokes/minute, with a 5 inch diameter cylinder, a 12 inch stroke and operating with 75% volumetric efficiency, what is the capacity of this pump?	73 gpm	291 gpm	145 gpm	349 gpm	
11	3023	C	In the circle illustrated, the circumference is 125.6 inches. What is the area of the shaded portion?	234.0 square inches	107.0 square inches	114.1 square inches	214.0 square inches	GS-0134
11	3024	D	A typical shipboard domestic multi-box refrigeration system operates with one compressor and condenser. What is the purpose of the sensing line connected to the thermal bulb at the evaporator coil outlet?	To open or close the solenoid valve when the box temperature increases or decreases.	To open the back-pressure regulating valve when evaporator coil pressure increases.	To direct evaporator outlet pressure to the lower part of the solenoid bellows.	To transmit the pressure (proportional to the coil superheat) to the thermal expansion valve.	
11	3025	D	If the suction line of the refrigeration system shown in the illustration sweats excessively during operation, the expansion valve may be stuck open. Which of the following statements would indicate the most probable cause of this situation?	The power element and sensing bulb have lost their charge.	The equalizing line has become clogged with wax and ice.	The box door is open creating excessive thermal loading.	The sensing bulb has become detached from the suction line.	RA-0018
11	3026	B	Which of the following listed pressures is the maximum acetylene gas pressure that can be safely used in gas welding?	10 psi	15 psi	25 psi	35 psi	
11	3027	D	If you have a duplex single acting reciprocating pump making 110 strokes/minute, with a 6" diameter cylinder, a 7" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump?	100 gpm	43 gpm	172 gpm	86 gpm	

11	3028	D	In the illustration, line "K" is a _____.	dimension line	leader line	cutting plane line	phantom line	GS-0006
11	3029	A	The illustrated shaft has an overall length of 42 inches. If the diameter of "E" = 4.750" and "F" = 6", with an indicated radius of "R" = .125" and the taper per foot, "L" = 1.5"; then the tapered length "X" is _____.	6.000 inches	7.812 inches	8.000 inches	10.00 inches	GS-0133
11	3030	B	In the illustrated 8,000 GPD evaporator the salt water feed pump and pump "N" are identically constructed. If the vapor pressure in chamber "II" is 2.1 psia, with a feed temperature of 170°F; operating pump "N" with the discharge valve 100% open will _____.	produce the designed quantity of distillate	contribute to chamber "II" and "III" operating at the same absolute pressure	increase the purity of the distillate	produce a higher than normal brine concentrate	GS-0053
11	3031	D	The function of item "7" shown in the illustration is to _____.	direct the flow of the oily-water mixture against the coalescer bed	support the tank access panel	allow the oil accumulated to exit the device, while remaining separated from the liquid	prevent separated oil from mixing with the incoming bilge water	GS-0153
11	3032	A	The illustrated shaft has an overall length of 15 inches. If the diameter of "E" = 2.5" and "F" = 3.5", with an indicated radius of "R" = .125" and the length of the tapered section "X" is to be 5"; then the amount of tailstock offset should be _____?	0.750"	0.833"	1.250"	1.500"	GS-0133
11	3033	D	If you have a duplex single acting reciprocating pump making 130 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump?	211 gpm	130 gpm	118 gpm	60 gpm	
11	3034	B	Thermostatic expansion valves are opened _____.	by spring pressure and closed by refrigerant pressure	by refrigerant pressure and closed by spring pressure	and closed by spring pressure	and closed by refrigerant pressure	

11	3035	A	The refrigeration system shown in the illustration has a frosted and frozen suction line and the surrounding air has a high relative humidity. The box temperature is 10˚F above setpoint, with the unit operating in the cool mode. Which of the listed actions should be taken?	Initiate the defrost cycle and ascertain the proper operation of the three way valve.	Add freon to the unit to establish an operating discharge pressure of 150 psig.	Change the rotation of the condenser fans.	Using an 'amp clamp', determine if the electric drip pan heaters are ungrounded and operating correctly.	RA-0018
11	3036	A	When gas welding or burning, the acetylene working pressure must be kept below 15 psi to prevent a possible _____.	explosion	torch backfire	torch flameout	acetone fire	
11	3037	A	If you have a duplex single acting reciprocating pump making 170 strokes/minute, with a 8 inch diameter cylinder, a 8 inch stroke and operating with 89% volumetric efficiency, what is the capacity of this pump?	263 gpm	132 gpm	66 gpm	33 gpm	
11	3038	B	In the circle illustrated, the circumference is 75.36 inches. What is the area of the shaded portion?	65.0 square inches	41.1 square inches	38.5 square inches	77.0 square inches	GS-0134
11	3039	A	The valve in the line, labeled "C" in the illustrated system, should be opened _____.	when filling the tank	when discharging the pulverized material after it has been fluidized and aerated.	after the tank is full to check the level of bulk material	when the tank is empty to prevent condensation from accumulating	GS-0163
11	3041	C	The maximum diameter of the device illustrated is _____.	1.275 inches	1.522 inches	1.749 inches	3.752 inches	GS-0008
11	3042	B	The section of flange illustrated and indicated as "D" is a _____.	van stone flange	socket weld flange	expansion flange	threaded flange	GS-0018
11	3044	C	Which of the following statements describes the characteristics of precision manufactured roller bearings?	They are not capable of maintaining alignment over long periods of time.	They have a relatively high power loss due to friction.	They are well adapted to variable speed operation.	Their lubrication is complicated and requires constant attention.	
11	3045	B	Concerning the operation of refrigeration systems, frosting or sweating of a liquid line is usually indicative of _____.	high surrounding relative humidity	a refrigerant line restriction	water in the system	proper cooling taking place	

11	3046	C	If a block and tackle arrangement were rigged as shown in figure "G" in the illustration, the amount of force "P" required to hold the 394 pound load stationary would be _____.	70 lbs.	82 lbs.	99 lbs.	131 lbs.	GS-0110
11	3048	A	The hydraulic pump which would be mounted on the unit shown in the illustration, may begin to cavitate if _____.	"D" is not kept clean	"A" is allowed to remain open	"B" is over tightened	"H" were to be removed and the system operated for thirty minutes without it being replaced	GS-0118
11	3049	D	Which of the listed conditions will occur if valve "14" of the unit shown in the illustration is secured while the unit is operating in the processing mode?	The water in the bilges will continue to be discharged.	The water in the bilges will rise until probe "6" activates the separator.	The water in the bilges will rise until probe "6" causes the automatically operated valve "5" to open.	The water in the bilges will continue to rise if no other pump is operated because the pump suction valve has been secured.	GS-0153
11	3050	A	If you have a duplex single acting reciprocating pump making 120 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump?	68 gpm	56 gpm	34 gpm	135 gpm	
11	3051	A	The backlash of the gear illustrated is represented by _____.	G	M	N	O	GS-0111
11	3052	C	If you have a duplex double acting reciprocating pump making 110 strokes/minute, with a 4" diameter cylinder, a 6" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump?	33 gpm	50 gpm	67 gpm	17 gpm	
11	3054	A	Immediately before the actual charging process is started, refrigerant oil charging lines should be loosely connected and _____.	flushed with clean refrigerant oil	purged with refrigerant gas	washed with an ammonia and alcohol solution	grounded to the compressor	

11	3055	C	A noisy compressor in the system shown in the illustration may be caused by _____.	a normal pressure differential between the suction and discharge valve assemblies	retightened compressor foundation bolts	an excessive amount of oil in the crankcase	all of the above are correct	RA-0018
11	3058	A	In the illustration, the item labeled as '30' is _____. I. used to prime the pump at start-up II. to supply sealing water to the stuffing box	I only	II only	Both I and II	Neither I nor II	GS-0012
11	3059	C	If you have a duplex double acting reciprocating pump making 150 strokes/minute, with a 7" diameter cylinder, a 13" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump?	308 gpm	491 gpm	617 gpm	1146 gpm	
11	3060	C	In the hydraulic anchor windlass system illustrated, pressure relief of the main pressure piping is provided by _____.	D	E	L	M	GS-0160
11	3062	C	A 'P-tank' as used aboard oilfield supply boats is _____.	a pressure vessel designed to transport liquid drill mud	a pneumatically operated tank used transfer liquid drill mud	a pneumatically operated tank used to transfer dry, pulverized drilling materials	All of the above	
11	3063	D	Item "7" shown in the illustration is used to maintain _____.	separation between the baffle plate and the upper coalescer bed	separation between the oil exiting the device and the oily-water mixture entering through valve "4"	separation between the oily-water mixture entering the unit and the oil that is being discharged during the processing mode	segregation between the separated oil and the incoming oily-water mixture	GS-0153

11	3064	B	With a service gage manifold connected to a refrigerant compressor as illustrated, which arrangement of the gage manifold valves and compressor service valves would allow for simultaneous reading of the compressor suction and discharge pressures?	Valves "A" and "B" open, valves "C" and "D" closed on their front seats.	Valves "A" and "B" closed, valves "C" and "D" open just off the back seats.	Valves "A" and "B" closed and, back seated valves "C" and "D" back seated.	Valves "A" and "B" open, valves "C" and "D" open in mid- position.	RA-0003
11	3065	D	A noisy compressor, in a system similar to the installation shown in the illustration exhibits a high discharge pressure. This may be caused by _____.	the formation of ice at the expansion valve due to the presence of moisture in the system	the thermostatic expansion valve being restrained in a closed position	the formation of wax at the thermostatic expansion valve	all of the above are correct	RA-0018
11	3066	B	In the illustration, line "F" is a/an _____.	assembly line	break line	cutting plane line	phantom line	GS-0006
11	3067	C	If you have a duplex double acting reciprocating pump making 130 strokes/minute, with a 5" diameter cylinder, a 13" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump?	134 gpm	347 gpm	267 gpm	67 gpm	
11	3068	D	If you have a simplex single acting reciprocating pump making 170 strokes/minute, with a 5" diameter cylinder, a 7" stroke and operating with 97% volumetric efficiency, what is the capacity of this pump?	196 gpm	98 gpm	137 gpm	49 gpm	
11	3069	D	In the diagram, items '2A and 2B' represent the overboard discharge valves of the ballast system illustrated. According to 46 CFR Part 56, which of the following statements is correct if the vessels length between perpendiculars is 500 feet, and the through hull opening is four feet above the summer loadline?	Valve 2A must be positive closing, in addition to the indicated automatic non-return valve feature.	Valve 2B must be positive closing, in addition to the indicated automatic non-return valve feature.	Both valves must be positive closing, in addition to the ability to provide the automatic non-return feature.	Only one valve is required, but must be positive closing and include the automatic non-return feature.	GS-0125

11	3070	A	If a hole were to form in the division plate between stages of a flash type evaporator _____. I. vaporization of the feed water would continue II. 2nd stage vacuum would increase	I only	II only	Both I and II	Neither I nor II	
11	3072	A	The illustrated shaft has an overall length of 42 inches. If the diameter of "F" = 6" and "X" = 6", with an indicated radius of "R" = .125" and a taper per foot of "L" = 1.5"; then the small diameter "E" is _____.	4.750 inches	6.000 inches	6.333 inches	7.812 inches	GS-0133
11	3073	B	If you have a duplex single acting reciprocating pump making 110 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump?	33 gpm	49 gpm	49 gpm	98 gpm	
11	3074	C	A V-belt that is too tight will cause excessive wear of both the belt and the _____.	shaft of the prime mover	compressor slave pulley	main bearing of the compressor	prime mover drive pulley	
11	3075	C	A refrigeration system similar to the one shown in the illustration will only operate correctly in the cooling mode. Which of the following statements indicates the most probable cause?	The thermostatic expansion valve is improperly adjusted.	A very large pressure drop is apparent between the condenser and the evaporator.	The pilot valve solenoid has failed to become energized due to an open in the electrical circuit.	An excessive amount of compressor surge due to an overcharge of refrigerant.	RA-0018
11	3076	D	If a block and tackle arrangement were rigged as shown in figure "G" in the illustration, the amount of force "P" required to hold the 478 pound load stationary would be _____.	82 lbs.	111 lbs.	115 lbs.	120 lbs.	GS-0110
11	3078	D	If you have a duplex double acting reciprocating pump making 130 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump?	207 gpm	483 gpm	104 gpm	414 gpm	

11	3079	C	In the circle illustrated, the circumference is 35.84 feet. What is the area of the shaded portion?	2.7 square feet	0.5 square feet	9.3 square feet	17.4 square feet	GS-0134
11	3080	D	If you have a duplex double acting reciprocating pump making 150 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump?	244 gpm	570 gpm	122 gpm	488 gpm	
11	3081	D	A valve connected to the vent line labeled "C" in the illustration should be opened _____.	when flushing the pressure tank with firemain water	by a pressure relief valve when the pressure exceeds the preset level, usually 42 psig (2.98 kg/cm2)	at all times, except when the tank is pressurized for discharging or aerating the bulk material	when filling the tank or to insure that the tank is not pressurized prior to entering for cleaning and inspection	GS-0163
11	3082	A	In the hydraulic anchor windlass system illustrated, pressurized fluid flow to provide rotation of the wildcat is produced by _____.	A	F	J	K	GS-0160
11	3083	C	If you have a duplex single acting reciprocating pump making 110 strokes/minute, with a 7" diameter cylinder, a 8" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump?	152 gpm	67 gpm	133 gpm	267 gpm	
11	3084	B	To test for a suspected large refrigerant leak from a refrigeration system in an enclosed area, you should _____.	apply liquid ammonia to the suspected leak	apply a soap solution to the area of the suspected leak	a halide leak detector to all piping joints	apply a hydrostatic test with water	
11	3085	D	A low oil level maintained in an operating compressor, similar to the unit shown in the illustration, may be caused by _____.	an internal leak within the heat exchanger	an improperly operating filter/ drier	a properly operating filter/ drier	a worn piston or cylinder sleeve	RA-0018

11	3086	D	When arc welding, you can reduce the chance of a dangerous electric shock by _____.	using insulated electrode holders	wearing dry welding gloves	avoiding wet or damp areas while using arc welding equipment	all of the above	
11	3087	B	The letter "H" of the illustrated gear, represents the _____.	tooth profile	tooth fillet	bottom land	top land	GS-0111
11	3089	A	If you have a duplex double acting reciprocating pump making 130 strokes/minute, with a 5" diameter cylinder, a 13" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump?	267 gpm	134 gpm	347 gpm	67 gpm	
11	3090	C	If you have a duplex double acting reciprocating pump making 170 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 97% volumetric efficiency, what is the capacity of this pump?	81 gpm	54 gpm	161 gpm	40 gpm	
11	3091	A	The illustrated shaft has an overall length of 42 inches. If the diameter of "E" = 4.75" and "F" = 6", with an indicated radius of "R" = .125" and the length of "X" = 8"; then the TPF (taper per foot) is _____.	1.125 TPF	1.250 TPF	1.500 TPF	1.875 TPF	GS-0133
11	3092	B	Operating pressure range for an oilfield supply boat 'P-tank' generally varies from _____.	5-15 psi	15-40 psi	50-100 psi	100-150 psi	
11	3093	C	In the hydraulic crane illustrated, the hydraulic motor shows signs of rotating with difficulty and is rising in temperature. The probable cause is the _____.	item #5 is not opening	item #4 does not actuate and prevents the brake from releasing	drain line from the hydraulic motor casing has become blocked	hydraulic pump is producing a higher than designed flow rate	GS-0161
11	3094	B	Which of the fluids listed is normally used to condense the primary refrigerant in a shipboard central air conditioning system?	Air or nitrogen.	Seawater or Fresh water.	Sodium Nitrate brine.	Calcium Sulfate brine.	

11	3095	C	If you have a duplex single acting reciprocating pump making 110 strokes/minute, with a 6" diameter cylinder, a 9" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump?	49 gpm	75 gpm	110 gpm	150 gpm	
11	3096	B	Before welding is permitted on a fuel tank, it must be certified or declared _____.	safe for personnel	safe for hot work	not safe for personnel	not safe for hot work	
11	3098	A	In the hydraulic anchor windlass system illustrated, pressurized fluid flow is provided to the main system for automatic replenishment and to _____.	provide fluid flow for the horsepower limiter unit operation	engage the spring brake	shift valve "L" to line up the fluid motor relief valve	move stored oil across the indicated filter to maintain the oil in a water free condition	GS-0160
11	3099	B	In the circle illustrated, the circumference is 43.96 feet. What is the area of the shaded portion?	10.5 square feet	14.0 square feet	2.4 square feet	26.2 square feet	GS-0134
11	3100	A	If a hole were to form in the division plate between stages of a flash type evaporator _____. I. vaporization of the feed water would continue at second stage designed saturation conditions II. all of the distillate produced would be certain to be contaminated by salt water carry over	I only	II only	Both I and II	Neither I nor II	
11	3102	A	If a block and tackle arrangement were rigged as shown in figure "G" in the illustration, the amount of force "P" required to hold the 594 pound load stationary would be _____.	149 lbs.	160 lbs.	198 lbs.	238 lbs.	GS-0110
11	3103	B	If you have a duplex single acting reciprocating pump making 270 strokes/minute, with a 4" diameter cylinder, a 6" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump?	99 gpm	66 gpm	33 gpm	132 gpm	

11	3104	D	A room humidistat initiates the lowering of the humidity of the conditioned supply air to a space, while the actual process is accomplished by _____.	raising the cooling coil temperature and lowering the reheater temperature	raising both the cooling coil temperature and the reheater temperature	lowering both the cooling coil temperature and the reheater temperature	lowering the cooling coil temperature and raising the reheater temperature	
11	3105	A	The physical feature indicated for each of the smallest diameter ends of the device illustrated is that they are _____.	threaded	smooth surfaced with opposing machined flats	smoothed surfaced only	threaded with opposing machined flats	GS-0008
11	3106	D	Safe welding practice requires _____.	checking the area for items that may catch fire	that a fire watch be posted	checking for explosive gases	all of the above	
11	3107	D	As shown in the illustration, the total number of materials indicated is _____.	one	three	four	five	GS-0018
11	3108	A	In the circle illustrated, the circumference is 62.8 feet. What is the area of the shaded portion?	28.5 square feet	38.5 square feet	15.1 square feet	53.5 square feet	GS-0134
11	3109	A	If you have a duplex double acting reciprocating pump making 110 strokes/minute, with a 6" diameter cylinder, a 13" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump?	319 gpm	159 gpm	345 gpm	80 gpm	
11	3111	D	What would be the probable cause if a pump were unable to maintain necessary discharge pressure to a system? I. failure of the coupling used on a close-coupled pump II. fracture of one packing gland bolt	I only	II only	Both I and II	Neither I nor II	
11	3112	C	In a typical hydraulic system, a baffle is installed in the reservoir to _____. I. insure proper lubrication of the hydraulic pump II. assist in the removal of solid contaminants entrained in the returning oil	I only	II only	Both I and II	Neither I and II	

11	3113	B	Supply air pressure to an oilfield supply boat 'P-tank' system should generally not be above _____.	15 psi	50 psi	100 psi	150 psi	
11	3114	D	Which of the following methods is normally used to control the temperature of air distributed from individual cooling coils in an air conditioning system using a chilled water circulation system?	A room thermostat activates an electric heater at each individual chilled air outlet when necessary.	Varying the number of passes the air makes across the coils.	Varying the temperature of the water through the coils.	Varying the quantity of water flowing through the coils.	
11	3115	C	If you have a duplex single acting reciprocating pump making 150 strokes/minute, with a 3" diameter cylinder, a 5" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump?	35 gpm	11 gpm	21 gpm	42 gpm	
11	3116	B	If you have a duplex single acting reciprocating pump making 180 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump?	104 gpm	60 gpm	30 gpm	119 gpm	
11	3117	D	In the unit illustrated, the feedwater temperature is required to be increased to 165°F or greater and must exist at this temperature when leaving _____.	I	III	IV	V	GS-0053
11	3118	A	If you have a duplex single acting reciprocating pump making 220 strokes/minute, with a 3" diameter cylinder, a 5" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump?	29 gpm	49 gpm	59 gpm	113 gpm	
11	3119	A	Salinity cells are strategically installed in distilling units to indicate the _____. I. location of a saltwater leak II. size of the leak	I only	II only	Both I and II	Neither I nor II	

11	3120	C	In the diagram, items '2A and 2B' represent the overboard discharge valves of the ballast system illustrated. According to 46 CFR Part 56, which of the following statements is correct if the length between perpendiculars of a vessel is 500 feet, and the through hull opening is eleven feet above the summer loadline?	Valve 2A must be positive closing, in addition to the indicated automatic non-return valve feature.	Valve 2B must be positive closing, in addition to the indicated automatic non-return valve feature.	Only one automatic non-return valve feature is required.	Both valves are correct as required and indicated in the illustration.	GS-0125
11	3121	C	In the hydraulic anchor windlass system illustrated, the main pressure relief valve opens as the load increases its strain on the system. The probable cause is the _____.	replenishing pump discharge check valves are continously open	relief valve control shuttle has shifted to the wrong postion during windlass operation	manual transfer valve is in the wrong postion for the main pump being operated	spring set point "I" is set too high for normal loads	GS-0160
11	3122	B	The illustrated shaft has an overall length of 42 inches. If the diameter of "E" = 2.50" and "F" = 3.750", with an indicated radius of "R" = .125" and the taper per foot, "L" = 1.5"; then the tapered length "X" is _____.	5.000 inches	6.000 inches	8.000 inches	10.00 inches	GS-0133
11	3123	A	The gear clearance of the illustrated gear is represented by _____.	B	D	G	M	GS-0111
11	3124	C	The thermostatic expansion valve is designed to maintain constant _____.	refrigerant flow	box temperature	coil outlet superheat	coil pressure	
11	3125	C	A valve attached to line "H" in the illustration, should be opened _____.	to backflush the pressure vessel with jet air	as a gravity discharge for the fluidized material if the discharge line becomes clogged	to drain moisture and dirt from the bottom of the tank	to precharge the bottom of the pressure vessel with dry nitrogen prior to discharging bulk material	GS-0163
11	3126	A	Which statement describes the function of the filler material used in acetylene cylinders?	It reduces the danger of explosion.	It chemically reacts with acetone to produce acetylene.	It neutralizes the gas to render it harmless.	It is fire resistant and reduces fire hazards.	

11	3127	C	What would be the probable cause if a pump were unable to maintain necessary discharge pressure to a system? I. failure of the internal parts of the pump II. failure of the pump relief valve spring	I only	II only	Both I and II	Neither I nor II	
11	3128	A	An air compressor is equipped with an intercooler to _____. I. increase the efficiency of the compressor II. reduce the low pressure cylinder designed operating temperature	I only	II only	Both I and II	Neither I nor II	
11	3129	B	If you have a duplex double acting reciprocating pump making 110 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump?	172 gpm	343 gpm	400 gpm	86 gpm	
11	3130	B	The pitch radius of the gear illustrated is represented by _____.	D	E	L	P	GS-0111
11	3131	D	A compressor operating with an accumulation of dust and grease on the surfaces of an intercooler would result in _____. I. a decrease in volumetric efficiency of the compressor II. higher volume of air to be discharged to the receiver	I only	II only	Both I and II	Neither I nor II	
11	3132	D	If you have a duplex single acting reciprocating pump making 230 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 78% volumetric efficiency, what is the capacity of this pump?	120 gpm	34 gpm	137 gpm	68 gpm	
11	3133	C	In the illustration, the portion of the workpiece which is indicated as being 7/8" in length, is an example of a _____.	uniform diameter	radius	taper	chamfer	GS-0016

11	3134	C	In multi-box refrigeration systems, the sensing bulb of the thermostatic expansion valves used on refrigerated boxes with elevated temperatures should be located _____.	in the diffuser fan inlet air stream	in the diffuser fan outlet air stream	before the back pressure regulating valve	after the back pressure regulating valve	
11	3135	B	When the helm angle position is changed, the series of corresponding events of the steering gear will include _____. I. rate of steering gear ram movement will be proportional to amount of helm angle input II. degree of tilting plate (box) angle will be proportional to the amount of helm angle input	I only	II only	Both I and II	Neither I nor II	
11	3136	A	A compressor operating with an accumulation of dust and grease on the surfaces of an intercooler would result in _____. I. a high consumption of lube oil II. higher than normal air pressure in the receiver	I only	II only	Both I and II	Neither I nor II	
11	3137	A	If you have a duplex single acting reciprocating pump making 120 strokes/minute, with a 5" diameter cylinder, a 6" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump?	54 gpm	65 gpm	274 gpm	109 gpm	
11	3138	B	A set point adjustment to a bourdon tube pressure gage is accomplished by _____. I. adjusting the effective moment arm length between the end of the bourdon tube and the quadrant gear fulcrum II. adjusting the pointer position relative to the pinion shaft upon which it is mounted	I only	II only	Both I and II	Neither I nor II	

11	3140	C	If you have a duplex double acting reciprocating pump making 110 strokes/minute, with a 7" diameter cylinder, a 13" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump?	217 gpm	403 gpm	434 gpm	108 gpm	
11	3141	A	If your ship burns 8 tons of fuel per hour at 15 knots, how many tons per hour will it burn at 18 knots?	13.8 tons	11.5 tons	10.7 tons	9.5 tons	
11	3142	B	Salinity cells are strategically installed in distilling units to indicate the _____. I. purity of the distillate produced II. quality of the distillate produced	I only	II only	Both I and II	Neither I nor II	
11	3143	C	A P-tank system _____.	is designed to transfer thick viscous liquids	is designed to pump chunks of cement	must be kept free of foreign objects	answers B and C above	
11	3144	C	Vapor seals used in the insulation on refrigerated spaces serve to _____.	prevent Freon vapor from saturating the insulation	hold water vapor on the cold side of the insulation	reduce the possibility of moisture laden warm air entering the insulation	reduce the possibility of moisture laden cold air from entering the insulation	
11	3145	B	If a block and tackle arrangement were rigged as shown in figure "G" in the illustration, the amount of force "P" required to hold the 642 pound load stationary would be _____.	132 lbs.	161 lbs.	214 lbs.	257 lbs.	GS-0110
11	3146	A	If you have a duplex single acting reciprocating pump making 210 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 77% volumetric efficiency, what is the capacity of this pump?	62 gpm	108 gpm	31 gpm	123 gpm	

11	3147	A	The following results were obtained when an uncalibrated bourdon tube pressure gage was compared to a test pressure gage. Which adjustment(s) is/are necessary? True Pressure Indicated Pressure 20; 35;30; 45;40; 55;50;65; I. set point adjustment II. proportional band (range) adjustment	I only	II only	Both I and II	Neither I nor II	
11	3148	B	If you have a duplex double acting reciprocating pump making 130 strokes/minute, with a 3" diameter cylinder, a 10" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump?	37 gpm	74 gpm	123 gpm	18 gpm	
11	3149	B	In a typical hydraulic system, a baffle is installed in the reservoir to _____. I. provide a critical reduction in free surface effect of the hydraulic pump II. retard flow of oil through reservoir to assist in heat removal	I only	II only	Both I and II	Neither I and II	
11	3150	C	The unloading of an air compressor may be provided by _____. I. holding the intake valve off of its seat II. temporarily relieving the the intercooler to the atmosphere	I only	II only	Both I and II	Neither I nor II	
11	3151	D	If you have a duplex single acting reciprocating pump making 170 strokes/minute, with a 4" diameter cylinder, a 6" stroke and operating with 96% volumetric efficiency, what is the capacity of this pump?	80 gpm	27 gpm	107 gpm	53 gpm	
11	3152	B	Your ship has steamed 1786 miles at 17 knots using 515 tons of fuel oil. The distance remaining to your next port is 1922 miles. If you increase speed to 20 knots, how much fuel will be used to reach that port?	652 tons	767 tons	858 tons	902 tons	

11	3154	D	Which of the design features listed for a refrigeration valve are used to reduce the possibility of loss of refrigerant from the system?	Back seating	Valve caps	Packless diaphragms	All of the above.	
11	3155	A	If you have a simplex single acting reciprocating pump making 180 strokes/minute, with a 4" diameter cylinder, a 6" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump?	27 gpm	108 gpm	54 gpm	81 gpm	
11	3156	C	The effective temperature of air is dependent upon _____. I. relative humidity II. air velocity	I only	II only	Both I and II	Neither I nor II	
11	3157	A	The illustrated shaft has an overall length of 42 inches. If the diameter of "F" = 3.75" and "X" = 6", with an indicated radius of "R" = .125" and a taper per foot, of "L" = 1.5"; then the small diameter "E" is _____.	2.500 inches	4.333 inches	5.333 inches	10.00 inches	GS-0133
11	3159	C	If you have a duplex double acting reciprocating pump making 100 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 82% volumetric efficiency, what is the capacity of this pump?	31 gpm	55 gpm	62 gpm	16 gpm	
11	3160	D	Salinity cells are strategically installed in flash type distilling units to indicate the _____. I. presence of leaks in the flash chambers II. quantity of the distillate produced	I only	II only	Both I and II	Neither I nor II	
11	3162	C	If you have a duplex double acting reciprocating pump making 190 strokes/minute, with a 5" diameter cylinder, a 12" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump?	145 gpm	349 gpm	291 gpm	73 gpm	

11	3163	A	The compressor in figure 4, if permitted to operate as illustrated will _____.	damage the bearings of the driving motor	lose a percentage of its volumetric efficiency	increase the axial thrust on the compressor crankshaft	result in a constant enlargement of the clearance expansion volume	GS-0159
11	3164	C	The device which normally stops the refrigeration compressor before the relief valve starts to open is the _____.	low pressure cutout switch	back pressure cutout switch	high pressure cutout switch	relief valve bypass	
11	3165	C	If your ship burns 8 tons of fuel per hour at 15 knots, how many tons per hour will it burn at 19 knots?	10.1 tons	12.8 tons	16.3 tons	19.1 tons	
11	3166	B	If you have a duplex double acting reciprocating pump making 170 strokes/minute, with a 3" diameter cylinder, a 10" stroke and operating with 77% volumetric efficiency, what is the capacity of this pump?	40 gpm	80 gpm	134 gpm	20 gpm	
11	3167	A	When the helm angle position is changed in the wheel house, a series of corresponding events of the steering gear will occur and include the following: I. The length of time the steering gear pump remains on stroke is proportional to helm angle input II. System pressure will be higher when the vessel is operating "full astern"	I only	II only	Both I and II	Neither I nor II	
11	3168	A	If you have a duplex single acting reciprocating pump making 170 strokes/minute, with a 5" diameter cylinder, a 4" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump?	49 gpm	39 gpm	25 gpm	98 gpm	
11	3169	D	If you have a duplex double acting reciprocating pump making 180 strokes/minute, with a 6" diameter cylinder, a 11" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump?	206 gpm	378 gpm	103 gpm	412 gpm	

11	3170	A	A compressor operating with an accumulation of dust and grease on the surfaces of an intercooler would result in _____. I. the motor to run warmer than usual II. lower density air discharged to the receiver	I only	II only	Both I and II	Neither I nor II	
11	3171	D	If you have a duplex double acting reciprocating pump making 150 strokes/minute, with a 3" diameter cylinder, a 5" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump?	21 gpm	35 gpm	11 gpm	42 gpm	
11	3172	B	If high relative humidity is maintained in a cargo hold, there is a significant possibility that _____. I. there will be an accumulation of static electricity II. mold will grow and contaminate the cargo	I only	II only	Both I and II	Neither I nor II	
11	3173	A	The proper valve alignment for circulating mud in the starboard forward tank in the illustration, is for valves _____.	"E", "F", "J" and "K" open, and all other valves closed	"E", "R", "J", "K" and "S" open and a weighted hose connecting "R" and "S"	"E", "F", "B" and "D" open and all other valves closed	"E", "F", "A", "B" and "D" open. all other valves closed	GS-0162
11	3174	A	An economizer or heat exchanger in a refrigeration system, using a reciprocating compressor, functions to _____.	reduce the possibility of liquid refrigerant slugging the compressor	raise the temperature of liquid refrigerant	cool the suction vapor returning to the compressor	raise the refrigerant saturation temperature in the evaporator	
11	3176	C	If you have a duplex double acting reciprocating pump making 190 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 80% volumetric efficiency, what is the capacity of this pump?	260 gpm	608 gpm	521 gpm	130 gpm	

11	3177	D	Your ship has steamed 1856 miles at 18 knots using 545 tons of fuel oil. The distance remaining to your next port is 1978 miles. If you increase speed to 22 knots, how much fuel will be used to reach that port?	690 tons	710 tons	772 tons	868 tons	
11	3178	C	If you have a duplex double acting reciprocating pump making 160 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump?	52 gpm	91 gpm	104 gpm	26 gpm	
11	3179	A	A proportional band or range adjustment to a bourdon tube pressure gage is accomplished by _____. I. adjusting the effective moment arm length between the end of the bourdon tube and the quadrant gear fulcrum II. adjusting the pointer position relative to the pinion shaft upon which it is mounted	I only	II only	Both I and II	Neither I nor II	
11	3180	B	The following results were obtained when an uncalibrated bourdon tube pressure gage was compared to a test pressure gage. Which adjustment(s) is/are necessary? True Pressure Indicated Pressure 30-30;40-50;50-70;60-90; I. set point adjustment II. proportional band (range) adjustment	I only	II only	Both I and II	Neither I nor II	
11	3182	D	The unit shown in the illustration is known as a/an _____.	bilge water conditioner	sludge processor	oily-water conditioner	oily-water separator	GS-0153
11	3183	D	In order to achieve greater dehumidification, you would adjust the air conditioning system by _____. I. reducing the chill water flow through the cooling coil II. increasing the preheater temperature	I only	II only	Both I and II	Neither I nor II	

11	3184	D	A refrigerant used in a mechanical refrigeration system should have which of the following characteristics?	High boiling point	High freezing point	Low specific heat	Low boiling point	
11	3185	A	If you have a duplex double acting reciprocating pump making 150 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump?	104 gpm	52 gpm	91 gpm	26 gpm	
11	3186	B	A large evaporator coil has been determined to have a pressure drop of 5 psig and can be compensated for by _____. I. adjusting the TXV spring compression and raising the super heat value II. installing an externally equalized TXV	I only	II only	Both I and II	Neither I nor II	
11	3187	A	If your ship burns 8 tons of fuel per hour at 15 knots, how many tons per hour will it burn at 20 knots?	19.0 tons	21.7 tons	22.4 tons	27.0 tons	
11	3188	D	If you have a duplex double acting reciprocating pump making 220 strokes/minute, with a 3" diameter cylinder, a 5" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump?	29 gpm	49 gpm	15 gpm	59 gpm	
11	3191	C	It is necessary to replace the defective thermal expansion valve in a refrigeration system. If the valve is improperly sized, this could result in _____. I. starvation of the evaporator coil II. constant hunting of the TXV and pressure surging	I only	II only	Both I and II	Neither I nor II	
11	3192	B	Your ship has steamed 1940 miles at 21 knots using 635 tons of fuel oil. The distance remaining to your next port is 1833 miles. If you increase speed to 25 knots, how much fuel will be used to reach that port?	714 tons	850 tons	1012 tons	1214 tons	

11	3194	C	Which of the listed substances is used as an absorbing agent in the shipboard dehydration of refrigeration systems?	Ethylene glycol	Sodium bromide	Silica gel	Methyl glycol	
11	3195	B	If you have a duplex single acting reciprocating pump making 180 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump?	50 gpm	75 gpm	37 gpm	150 gpm	
11	3196	D	If you have a duplex double acting reciprocating pump making 180 strokes/minute, with a 5" diameter cylinder, a 6" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump?	40 gpm	80 gpm	96 gpm	160 gpm	
11	3197	C	In the illustration, line "B" is a/an _____.	hidden line	sectioning line	outline	phantom line	GS-0006
11	3198	A	If you have a duplex double acting reciprocating pump making 190 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump?	109 gpm	54 gpm	95 gpm	27 gpm	
11	3199	C	If you have a duplex single acting reciprocating pump making 180 strokes/minute, with a 4" diameter cylinder, a 6" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump?	81 gpm	27 gpm	54 gpm	108 gpm	
11	3200	B	The following results were obtained when an uncalibrated bourdon tube pressure gage was compared to a test pressure gage. Which adjustment(s) is/are necessary? True Pressure Indicated Pressure 20-35;30-50;40-65;50-80 I. set point adjustment II. proportional band (range) adjustment	I only	II only	Both I and II	Neither I nor II	

11	3201	C	The illustrated shaft has an overall length of 42 inches. If the diameter of "E" = 2.5" and "F" = 6", with an indicated radius of "R" = .125" and the length of "X" = 8"; then the TPF (taper per foot) is _____.	0.125 inches	1.250 inches	4.500 inches	6.875 inches	GS-0133
11	3202	D	If you have a duplex single acting reciprocating pump making 190 strokes/minute, with a 3" diameter cylinder, a 9" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump?	141 gpm	24 gpm	94 gpm	47 gpm	
11	3203	D	The base radius of the gear illustrated is represented by _____.	D	E	L	P	GS-0111
11	3204	B	An evaporator pressure regulating valve (back pressure regulator) is installed in the evaporator coils of some refrigeration systems to _____.	prevent compressor overload	maintain a minimum evaporator pressure	control liquid refrigerant pressure	regulate refrigerant outlet superheat	
11	3206	B	Subcooling of the refrigerant to reduce the percent of flash gas is accomplished _____. I. as the refrigerant passes through the expansion valve II. in most water cooled condensers	I only	II only	Both I and II	Neither I nor II	
11	3207	B	If you have a duplex double acting reciprocating pump making 180 strokes/minute, with a 4" diameter cylinder, a 5" stroke and operating with 96% volumetric efficiency, what is the capacity of this pump?	47 gpm	94 gpm	59 gpm	24 gpm	
11	3208	B	If your ship burns 8 tons of fuel per hour at 15 knots, how many tons per hour will it burn at 21 knots?	20.3 tons	22.0 tons	26.1 tons	29.4 tons	
11	3210	B	If you have a duplex double acting reciprocating pump making 140 strokes/minute, with a 5" diameter cylinder, a 6" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump?	64 gpm	129 gpm	77 gpm	32 gpm	

11	3211	D	The proper valve alignment for discharging liquid mud from the starboard forward tank, in the illustrated system, is for valves _____.	"E", "F", "J", "K" and "S" open, and all other valves closed	"E", "R", "J", "K" and "S" open with the discharge hose connected to "S"	"A", "B" and "D" open to pressure the tank with the discharge valve "R" open and the discharge hose connected to "R", and all other valves closed	"B", "D", "E" and "S" open with the discharge hose connected at "S", and all other valves closed	GS-0162
11	3212	C	Following the withdrawal of the tail shaft, which non-destructive test could be used to locate cracks? I. liquid penetrant dye II. magnetic flux	I only	II only	Both I and II	Neither I nor II	
11	3213	D	If you have a duplex double acting reciprocating pump making 110 strokes/minute, with a 5" diameter cylinder, a 10" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump?	47 gpm	94 gpm	125 gpm	170 gpm	
11	3214	A	In a large refrigeration system having more than one evaporator, a king solenoid valve should be installed and located _____.	just after the receiver	before the condenser	between the condenser and receiver	before the back pressure regulating valve	
11	3215	D	A partially fouled liquid line strainer in the refrigeration system will cause _____. I. an increase in the percent of flash gas II. desireable subcooling of the liquid	I only	II only	Both I and II	Neither I nor II	
11	3216	B	If you have a duplex single acting reciprocating pump making 190 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 80% volumetric efficiency, what is the capacity of this pump?	608 gpm	260 gpm	130 gpm	521 gpm	

11	3218	C	If you have a duplex double acting reciprocating pump making 180 strokes/minute, with a 3" diameter cylinder, a 4" stroke and operating with 97% volumetric efficiency, what is the capacity of this pump?	21 gpm	28 gpm	43 gpm	11 gpm	
11	3219	C	Your ship has steamed 1651 miles at 20 knots using 580 tons of fuel oil. The distance remaining to your next port is 1790 miles. If you increase speed to 25 knots, how much fuel will be used to reach that port?	640 tons	722 tons	983 tons	1060 tons	
11	3220	A	If you have a duplex single acting reciprocating pump making 180 strokes/minute, with a 4" diameter cylinder, a 13" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump?	108 gpm	352 gpm	54 gpm	216 gpm	
11	3222	C	If you have a duplex double acting reciprocating pump making 130 strokes/minute, with a 3" diameter cylinder, a 5" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump?	18 gpm	30 gpm	36 gpm	9 gpm	
11	3223	C	The presence of flash gas in the high pressure lines of a refrigeration system is undesireable because _____. I. erosion of the TXV valve seat can be increased II. refrigeration system capacity will be reduced	I only	II only	Both I and II	Neither I nor II	
11	3224	B	The thermostat controlling a refrigerated cargo box two-way solenoid valve senses _____.	evaporator coil inlet temperature	the refrigerated box temperature	evaporator coil outlet temperature	degree of refrigerant superheat	

11	3225	A	If you have a duplex double acting reciprocating pump making 250 strokes/minute, with a 5" diameter cylinder, a 6" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump?	232 gpm	114 gpm	86 gpm	57 gpm	
11	3226	C	If you have a simplex single acting reciprocating pump making 170 strokes/minute, with a 5" diameter cylinder, a 13" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump?	327 gpm	163 gpm	82 gpm	425 gpm	
11	3228	C	In the illustration shown, the last numeral in the notation 1/4-20 NC-2 indicates the _____.	thread is right hand	thread is left hand	class of thread fit	class of thread finish	GS-0036
11	3229	D	If you have a duplex double acting reciprocating pump making 130 strokes/minute, with a 6" diameter cylinder, a 7" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump?	104 gpm	121 gpm	52 gpm	207 gpm	
11	3230	D	If your ship burns 8 tons of fuel per hour at 15 knots, how many tons per hour will it burn at 22 knots?	11.7 tons	14.2 tons	17.2 tons	25.2 tons	
11	3231	C	In order to achieve greater dehumidification with an air conditioning system, you should _____. I. reduce the cooling coil temperature II. increase the reheater temperature	I only	II only	Both I and II	Neither I nor II	
11	3232	C	A partially fouled liquid line strainer in the refrigeration system will cause _____. I. a loss of refrigeration effect II. the strainer outlet piping to be cooler than the inlet	I only	II only	Both I and II	Neither I nor II	

11	3233	B	If you have a duplex single acting reciprocating pump making 170 strokes/minute, with a 4" diameter cylinder, a 11" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump?	249 gpm	91 gpm	45 gpm	181 gpm	
11	3234	D	The output capacity of a centrifugal refrigeration compressor may be controlled manually by _____.	controlling the compressor speed	throttling the compressor suction	reducing condenser water flow	all of the above methods	
11	3235	C	If a block and tackle arrangement were rigged as shown in figure "F" in the illustration, the amount of force "P" required to hold the 262 pound load stationary would be _____.	52.lbs.	59 lbs.	66 lbs.	87 lbs.	GS-0110
11	3236	D	If you have a duplex double acting reciprocating pump making 150 strokes/minute, with a 5" diameter cylinder, a 7" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump?	85 gpm	119 gpm	42 gpm	170 gpm	
11	3237	B	If you have a duplex double acting reciprocating pump making 170 strokes/minute, with a 5" diameter cylinder, a 4" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump?	49 gpm	98 gpm	39 gpm	25 gpm	
11	3238	D	If you have a simplex single acting reciprocating pump making 180 strokes/minute, with a 3" diameter cylinder, a 11" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump?	91 gpm	45 gpm	167 gpm	23 gpm	
11	3239	C	The reading on the micrometer scale shown in figure "1" in the illustration is _____.	0.800 inch	0.820 inch	0.850 inch	0.875 inch	GS-0094
11	3240	A	The reading on a vernier caliper scale is indicated as 1.500 inches. Which of the figures shown in the illustration represents this reading?	Figure A	Figure D	Figure F	Figure G	GS-0082

11	3241	A	If you have a duplex double acting reciprocating pump making 150 strokes/minute, with a 6" diameter cylinder, a 4" stroke with 95% volumetric efficiency, what is the capacity of this pump?	140 gpm	87 gpm	73 gpm	44 gpm	
11	3242	A	Your ship has steamed 1945 miles at 21 knots using 635 tons of fuel oil. The distance remaining to your next port is 1750 miles. If you decrease speed to 16 knots, how much fuel will be used to reach that port?	332 tons	435 tons	522 tons	1216 tons	
11	3243	C	If you have a simplex single acting reciprocating pump making 170 strokes/minute, with a 8" diameter cylinder, a 13" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump?	856 gpm	428 gpm	214 gpm	695 gpm	
11	3244	D	A thermostatic expansion valve is designed to respond to _____.	refrigerated space temperature	compressor suction pressure	vapor discharge pressure in the cooling coils	superheat in the tail coil	
11	3245	A	If the fixed material discharge piping between the P-tank and the on-deck outlet of the supply boat becomes clogged and cannot be cleared using normal system air pressure, the _____.	piping must be flushed with water	air should be directed through the jet air line	air pressure should be increased beyond the safety valve	piping must be disassembled and cleaned by hand	
11	3246	A	If you have a duplex double acting reciprocating pump making 170 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 97% volumetric efficiency, what is the capacity of this pump?	202 gpm	101 gpm	84 gpm	50 gpm	
11	3247	D	The chordal addendum of the illustrated gear is represented by _____.	A	C	D	L	GS-0111

11	3248	D	If you have a duplex double acting reciprocating pump making 110 strokes/minute, with a 5" diameter cylinder, a 7" stroke and operating with 79% volumetric efficiency, what is the capacity of this pump?	72 gpm	26 gpm	52 gpm	103 gpm	
11	3249	D	Which of the screwdriver tips listed will fit screws with a fourway or cross type slot?	Standard screwdriver	Phillips screwdriver	Reed and Prince screwdriver	Both B and C are correct	
11	3250	B	What is the distinguishing difference between the Phillips and the Reed and Prince type screwdrivers?	The diameter of the shanks.	The angle of the tip flukes.	The overall length of the screwdriver.	None of the above.	
11	3251	D	A large evaporator coil has been determined to have a pressure drop of 5 psig and can be compensated for by _____. I. doing nothing as this is typical of refrigeration systems II. throttling the suction of the compressor to prevent the occurance of the pressure drop	I only	II only	Both I and II	Neither I nor II	
11	3252	B	If you have a duplex double acting reciprocating pump making 160 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 96% volumetric efficiency, what is the capacity of this pump?	94 gpm	188 gpm	78 gpm	47 gpm	
11	3253	D	If you have a simplex single acting reciprocating pump making 180 strokes/minute, with a 6" diameter cylinder, a 11" stroke kand operating with 85% volumetric efficiency, what is the capacity of this pump?	412 gpm	206 gpm	378 gpm	103 gpm	
11	3255	B	If your ship burns 5 tons of fuel per hour at 23 knots, how many tons per hour will it burn at 18 knots?	1.9 tons	2.4 tons	3.1 tons	3.3 tons	

11	3256	B	If you have a duplex double acting reciprocating pump making 180 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 98% volumetric efficiency, what is the capacity of this pump?	108 gpm	216 gpm	90 gpm	54 gpm	
11	3258	A	If you have a simplex single acting reciprocating pump making 270 strokes/minute, with a 3" diameter cylinder, a 5" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump?	15 gpm	62 gpm	31 gpm	52 gpm	
11	3259	A	Which of the following statements best describes the filtering ability of a fine mesh metal lube oil strainer?	A 200 wire mesh screen will prevent passage of smaller particles than a 100 wire mesh screen.	A 200 mesh screen has larger wires than a 100 mesh screen.	A 100 wire mesh screen will prevent passage of smaller particles than 200 wire mesh screen.	A 200 wire mesh screen and a 100 wire mesh screen both prevent passage of the same size particles, but each allows a different number of particles to pass through.	
11	3260	C	Why is a chemical covering applied to a welding stick electrode, rather than using a bare electrode?	Protect the welder from electric shock.	Prevent arc blow.	Shield the arc during the welding process to prevent oxidation.	Stabilize the electron emission rate and produce uniform temperatures in the heat affected zone.	
11	3261	B	The components labeled "T" in the illustration are arranged to _____.	take suction from all areas of the tank	never point at the bottom of the tank	prevent barite that settles to the bottom of the tank from re-entering the system and preserving the weight of the mud	introduce inert gas to all areas of the tank to prevent vapors from exceeding the lower explosive level	GS-0162

11	3262	B	Three of the refrigerants covered under the low pressure system regulations are_____.	CFC-11, CFC-113 and R-502	CFC-11, CFC-113 and HCFC-123	CFC-11, R-502 and HCFC-123	CFC-11, CFC-114 and R-502	
11	3263	C	The device shown in the illustration is used to _____.	process sludge found on motor vessels	process sludge found on steam vessels	process oily-water mixtures present in the bilge water	condition reduction gear lube oil by removing the water	GS-0153
11	3265	C	The tool used to prepare copper tubing for the installation of fittings is called a _____.	swaging tool	stretcher	flaring tool	spreader	
11	3266	D	If you have a duplex double acting reciprocating pump making 140 strokes/minute, with a 5" diameter cylinder, a 6" stroke and operating with 79% volumetric efficiency, what is the capacity of this pump?	59 gpm	71 gpm	30 gpm	113 gpm	
11	3267	C	If you have a duplex double acting reciprocating pump making 130 strokes/minute, with a 6" diameter cylinder, a 4" stroke with 93% volumetric efficiency, what is the capacity of this pump?	59 gpm	39 gpm	118 gpm	30 gpm	
11	3268	B	If you have a duplex double acting reciprocating pump making 170 strokes/minute, with a 5" diameter cylinder, a 7" stroke and operating with 97% volumetric efficiency, what is the capacity of this pump?	98 gpm	196 gpm	137 gpm	49 gpm	
11	3269	C	Your ship has steamed 2014 miles at 22 knots using 680 tons of fuel oil. The distance remaining to your next port is 1766 miles. If you decrease speed to 18 knots, how much fuel will be used to reach that port?	327 tons	488 tons	399 tons	1220 tons	
11	3270	C	If you have a duplex double acting reciprocating pump making 140 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump?	64 gpm	43 gpm	129 gpm	32 gpm	

11	3271	D	The depth of fuel oil in a double bottom tank is measured through the _____.	vent line	depth gage	manhole cover	sounding tube	
11	3272	A	When in the completely opened position, which of the listed types of valve will offer the least resistance to flow?	gate valve	globe valve	double-seat poppet valve	reed valve	
11	3273	C	If used for regulating fluid flow through a piping system, which of the valves listed could be damaged?	Plug valve	Globe valve	Gate valve	Needle valve	
11	3274	D	Which of the operations listed may be accomplished using connection "E" shown in the illustration?	Purging	Charging	Adding oil	All of the above	RA-0003
11	3275	A	If you have a duplex double acting reciprocating pump making 140 strokes/minute, with a 4" diameter cylinder, a 5" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump?	72 gpm	36 gpm	45 gpm	18 gpm	
11	3276	C	The difference between the pressure at a point being measured and that of a perfect vacuum is known as _____.	internal pressure	gauge pressure	absolute pressure	external pressure	
11	3277	A	The root opening of the weld, shown in the illustration, is indicated to be _____.	not more than 1/8"	a 60° minimum	0 to 1/16'	not specified	GS-0076
11	3278	C	If you have a duplex double acting reciprocating pump making 140 strokes/minute, with a 4" diameter cylinder, a 8" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump?	29 gpm	57 gpm	115 gpm	230 gpm	
11	3279	D	If your ship burns 6 tons of fuel per hour at 22 knots, how many tons per hour will it burn at 17 knots?	1.4 tons	1.7 tons	2.2 tons	2.8 tons	
11	3280	B	In the system illustrated, valve "D" is used for _____.	load counter balance control	normal unloading of the hydraulic system	sequential operation of the load	the excess pressure relief of the system	GS-0049

11	3281	C	Which of the valves listed below permits flow in only one direction?	Gate valve	Globe valve	Check valve	Plug cock	
11	3282	D	If you have a duplex double acting reciprocating pump making 160 strokes/minute, with a 7" diameter cylinder, a 8" stroke and operating with 97% volumetric efficiency, what is the capacity of this pump?	207 gpm	236 gpm	103 gpm	414 gpm	
11	3283	A	Which of the listed welded joints represents the least amount of preparation?	1B	3A	3B	4A	GS-0077
11	3284	B	When adding oil to a refrigeration system, precautions must be taken to ensure that _____.	the compressor suction pressure is not too high	all air is purged from the pump and charging fittings	the high pressure cutout switch is held open to prevent accidental starting	the condenser is completely shutdown first	
11	3285	D	A hazard associated with electric arc welding is _____.	the effects of radiation from the arc	flying sparks	electric shock	all of the above	
11	3286	C	If you have a simplex single acting reciprocating pump making 180 strokes/minute, with a 5" diameter cylinder, a 7" stroke and operating with 98% volumetric efficiency, what is the capacity of this pump?	210 gpm	105 gpm	52 gpm	147 gpm	
11	3287	B	If you have a duplex double acting reciprocating pump making 120 strokes/minute, with a 3" diameter cylinder, a 4" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump?	14 gpm	28 gpm	19 gpm	7 gpm	
11	3288	D	In order to minimize distortion in a weldment due to shrinkage, you should _____.	use intermittent welds rather than continuous welds wherever possible	make fewer passes with larger electrodes as opposed to a great number of passes with small electrodes	use restraining forces such as clamps, jigs, and fixtures	all of the above	

11	3289	A	If you have a duplex double acting reciprocating pump making 130 strokes/minute, with a 4" diameter cylinder, a 9" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump?	118 gpm	59 gpm	133 gpm	30 gpm	
11	3290	A	The tooth profile of the illustrated gear is represented by _____.	F	H	I	J	GS-0111
11	3291	A	Your ship has steamed 2061 miles at 24 knots using 850 tons of fuel oil. The distance remaining to your next port is 1645 miles. If you decrease speed to 19 knots, how much fuel will be used to reach that port?	425 tons	537 tons	625 tons	712 tons	
11	3292	A	If you have a duplex double acting reciprocating pump making 180 strokes/minute, with a 4" diameter cylinder, a 9" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump?	157 gpm	78 gpm	176 gpm	39 gpm	
11	3293	B	Figure "I" shown in the illustration is a diagram of a valve handwheel, with S=8 inches and T=50 lbs. When an 24 inch cheaterbar is used instead, and V=50 lbs., as shown in Figure "II", what value of additional torque is now being applied to the hand wheel valve stem?	100%	300%	400%	500%	GS-0109
11	3294	B	The discharge valves used in a refrigeration compressor are leaking badly and _____.	the reeds should be reground	the reeds should be replaced	should continue to operate at minimum efficiency	the high pressure cut-out should be readjusted to operate efficiently	
11	3295	B	Which of the valves listed below is best suited for throttling service?	Plug	Globe	Gate	Butterfly	

11	3296	D	If you have a simplex single acting reciprocating pump making 170 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 97% volumetric efficiency, what is the capacity of this pump?	161 gpm	81 gpm	54 gpm	40 gpm	
11	3297	A	Which of the listed illustrated figures represents the use of a lathe finishing tool?	Figure P	Figure S	Figure T	Figure V	GS-0090
11	3298	A	The branch circuits labeled "T" in the illustration are designed to _____.	equalize mud flow through all of the nozzles	flush all parts of the tank with seawater during washdown	comply with oil pollution prevention regulations	take suction 12' to 14' above the bottom of the tank	GS-0162
11	3299	C	The valve illustrated is to be constructed so that the _____.	operating lever is parallel to the pipe center line when closed and perpendicular to the pipe center line when open	valve can have additional turns of packing added when there is pressure on either side of the valve disk	operating lever is parallel to the flow when open and perpendicular to the flow when closed	valve seat can be relapped as needed	GS-0055
11	3300	C	Which of the following statements is correct if the length of the vessel between perpendiculars is 500 feet, and the through hull opening is five feet above the summer loadline for the overboard discharge of the system illustrated?	The inboard valve only need be positive closing, in addition to being of the automatic non-return valve type.	The outboard valve only need be positive closing, in addition to being of the automatic non-return valve type.	Only one shutoff valve is required.	Two valves are required, and each must be of the automatic non-return type.	GS-0125
11	3301	B	If your ship burns 4 tons of fuel per hour at 21 knots, how many tons per hour will it burn at 16 knots?	2.3 tons	1.8 tons	1.3 tons	1.1 tons	
11	3302	B	Which single illustrated lathe tool could be used to turn down the stock in figure II?	A	B	C	G	GS-0009

11	3303	A	If item "1" shown in the illustration is a compound gage indicating zero psig and the water level in the bilges is one foot high, the unit is _____.	not turned on	in the oil discharge mode	processing the bilge water	damaged and should not be used	GS-0153
11	3304	D	A reheater, as used in an air conditioning system, is designed to control the _____.	chilled water temperature	dew point temperature	primary air temperature	dry bulb temperature	
11	3305	B	If you have a duplex double acting reciprocating pump making 130 strokes/minute, with a 5" diameter cylinder, a 11" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump?	113 gpm	226 gpm	249 gpm	57 gpm	
11	3306	B	If you have a duplex double acting reciprocating pump making 150 strokes/minute, with a 3" diameter cylinder, a 11" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump?	48 gpm	96 gpm	176 gpm	24 gpm	
11	3307	C	The reading on a vernier caliper scale is indicated as 2.505 inches. Which of the figures shown in the illustration represents this reading?	Figure A	Figure B	Figure F	Figure G	GS-0082
11	3308	A	If you have a duplex single acting reciprocating pump making 270 strokes/minute, with a 3" diameter cylinder, a 5" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump?	31 gpm	52 gpm	15 gpm	62 gpm	
11	3309	C	If you have a duplex double acting reciprocating pump making 110 strokes/minute, with a 6" diameter cylinder, a 7" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump?	86 gpm	100 gpm	172 gpm	43 gpm	

11	3310	D	Gate valves should not be used for throttling as _____.	the pressure drop will be excessive	air binding will develop	the installation of an equalizing line will be necessary	wire drawing of the disc will result	
11	3311	C	Your ship has steamed 1951 miles at 20 knots using 580 tons of fuel oil. The distance remaining to your next port is 1861 miles. If you increase speed to 24 knots, how much fuel will be used to reach that port?	569 tons	664 tons	797 tons	956 tons	
11	3312	B	If you have a duplex single acting reciprocating pump making 110 strokes/minute, with a 3" diameter cylinder, a 5" stroke and operating with 97% volumetric efficiency, what is the capacity of this pump?	27 gpm	16 gpm	8 gpm	33 gpm	
11	3313	A	Which of the figures illustrated would be LEAST desireable for use as a set screw?	figure A	figure F	figure G	figure L	GS-0080
11	3314	A	If the air temperature increases while atmospheric pressure remains constant, the air will _____.	have a greater capacity to absorb moisture	absorb less free atmospheric moisture	become supersaturated at high relative humidity	give up moisture as condensation	
11	3315	A	The lathe tool shown in the illustration as figure "P" is a _____.	round nose tool	universal tool	parting tool	right hand facing tool	GS-0090
11	3316	C	If you have a duplex double acting reciprocating pump making 140 strokes/minute, with a 3" diameter cylinder, a 12" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump?	48 gpm	193 gpm	97 gpm	24 gpm	
11	3317	B	The device shown in the illustration is a/an _____.	diesel engine motor mount	vane type steering gear	oil scraper ring stuffing box for a crosshead engine	mechanical shaft seal	GS-0116

11	3318	A	The reading on a vernier caliper scale is indicated as 3.380 inches. Which of the figures shown in the illustration represents this reading?	Figure B	Figure D	Figure E	Figure F	GS-0082
11	3319	C	If you have a duplex double acting reciprocating pump making 180 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump?	60 gpm	104 gpm	119 gpm	30 gpm	
11	3320	B	In the illustrated mud tank system, valve "A" should be opened to _____.	provide cooling for the diesel driven pump	clean tanks once they are empty	thin the mud because the weight is excessive	fill tanks to improve stability by reducing free surface effect	GS-0162
11	3321	D	If you have a simplex single acting reciprocating pump making 110 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump?	123 gpm	61 gpm	51 gpm	31 gpm	
11	3322	B	If you have a duplex single acting reciprocating pump making 170 strokes/minute, with a 5" diameter cylinder, a 7" stroke and operating with 97% volumetric efficiency, what is the capacity of this pump?	137 gpm	98 gpm	49 gpm	196 gpm	
11	3323	D	If you have a duplex double acting reciprocating pump making 120 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump?	68 gpm	56 gpm	34 gpm	134 gpm	
11	3324	A	The main purpose of the thermostatic expansion valve shown in the illustration is to _____.	maintain a constant degree of superheat in the gas leaving the evaporator coil	regulate refrigerant condensation rate	control the quantity of liquid refrigerant leaving the coil	control the operation of the solenoid valve	RA-0007

11	3325	D	The compressor in figure 5, if permitted to operate as illustrated will _____.	severely damage the V-grooves of the pulley	decrease the axial load on the crankshaft	decrease the axial load on the motor shaft	decrease the normal life of the drive belts	GS-0159
11	3326	D	If your ship burns 2.9 tons of fuel per hour at 20 knots, how many tons per hour will it burn at 15 knots?	4.3 tons	2.2 tons	1.6 tons	1.2 tons	
11	3327	D	If you have a duplex double acting reciprocating pump making 180 strokes/minute, with a 6" diameter cylinder, a 10" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump?	187 gpm	312 gpm	97 gpm	375 gpm	
11	3328	C	If you have a duplex single acting reciprocating pump making 100 strokes/minute, with a 7" diameter cylinder, a 9" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump?	67 gpm	223 gpm	135 gpm	270 gpm	
11	3329	C	If you have a duplex single acting reciprocating pump making 160 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump?	91 gpm	26 gpm	52 gpm	104 gpm	
11	3330	A	If you have a duplex double acting reciprocating pump making 170 strokes/minute, with a 5" diameter cylinder, a 9" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump?	226 gpm	113 gpm	204 gpm	57 gpm	
11	3331	A	The tool shown in the illustration is called a _____.	center gage	thread gage	crotch center	drill gage	GS-0072
11	3332	D	If you have a duplex double acting reciprocating pump making 150 strokes/minute, with a 7" diameter cylinder, a 9" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump?	214 gpm	275 gpm	107 gpm	427 gpm	

11	3333	A	If your ship burns 3 tons of fuel per hour at 19 knots, how many tons per hour will it burn at 15 knots?	1.5 tons	1.9 tons	2.4 tons	5.3 tons	
11	3334	C	Which of the statements listed is applicable to the thermostatic expansion valve shown in the illustration?	It regulates the amount of superheat at the solenoid valve.	It regulates the temperature of the refrigerated space.	The control bulb is located on the evaporator outlet coil.	The external equalizing pipe is connected to the liquid receiver.	RA-0007
11	3335	A	If you have a duplex single acting reciprocating pump making 150 strokes/minute, with a 6" diameter cylinder, a 8" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump?	140 gpm	186 gpm	70 gpm	279 gpm	
11	3336	C	If you have a duplex double acting reciprocating pump making 170 strokes/minute, with a 5" diameter cylinder, a 13" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump?	163 gpm	425 gpm	327 gpm	82 gpm	
11	3337	A	If you have a duplex double acting reciprocating pump making 120 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump?	135 gpm	68 gpm	56 gpm	34 gpm	
11	3338	D	If you have a simplex double acting reciprocating pump making 140 strokes/minute, with a 5" diameter cylinder, a 11" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump?	10 gpm	39 gpm	61 gpm	123 gpm	
11	3339	B	Which of the figures illustrated is not suitable for use as a hexhead set screw?	figure C	figure D	figure G	figure L	GS-0080

11	3340	D	If you have a duplex double acting reciprocating pump making 150 strokes/minute, with a 5" diameter cylinder, a 11" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump?	119 gpm	262 gpm	60 gpm	238 gpm	
11	3341	B	Item "J" in the pump illustration _____.	should be replaced by a grease fitting for semi-annual lubrication	will need to be piped to a fitting installed in place of the plug (in area "C") when the pump is used for hot water circulation	will need to be piped to a fitting installed in place of the plug (in area "C") when the the pump is used for cool potatable water	is provided to vent the pump of collected non-condensible gases	GS-0129
11	3342	A	If you have a simplex single acting reciprocating pump making 150 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump?	35 gpm	140 gpm	70 gpm	47 gpm	
11	3343	B	The operation of the device shown in the illustration is dependent upon _____.	all items, similar to "I" move as the rudder stock rotates	all items, similar to "N" move as the rudder stock rotates	both "I" and "N" move as the rudder stock rotates	neither "I" nor "N" move as the rudder stock rotates	GS-0116
11	3344	B	Refrigeration isolation valves are of the double seated type in order to _____.	allow for operation as a suction or discharge valve	permit repacking under pressure	conserve space	allow for removal or replacement without shutting down	
11	3345	D	The illustrated valve is _____.	opened or closed by moving the control lever through one or more complete turns	required to be closed by moving the control handle counter clockwise	quickly opened when the control lever is rotated one full turn	quickly opened by moving the control lever by one-quarter of a turn	GS-0055

11	3347	A	If you have a duplex double acting reciprocating pump making 150 strokes/minute, with a 6" diameter cylinder, a 13" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump?	453 gpm	227 gpm	491 gpm	113 gpm	
11	3348	B	If you have a duplex single acting reciprocating pump making 170 strokes/minute, with a 7" diameter cylinder, a 11" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump?	426 gpm	271 gpm	136 gpm	542 gpm	
11	3349	B	If you have a simplex double acting reciprocating pump making 140 strokes/minute, with a 6" diameter cylinder, a 10" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump?	81 gpm	161 gpm	268 gpm	322 gpm	
11	3350	C	If you have a simplex double acting reciprocating pump making 110 strokes/minute, with a 3" diameter cylinder, a 5" stroke and operating with 97% volumetric efficiency, what is the capacity of this pump?	33 gpm	27 gpm	16 gpm	8 gpm	
11	3351	B	If you have a duplex single acting reciprocating pump making 130 strokes/minute, with a 4" diameter cylinder, a 9" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump?	133 gpm	59 gpm	30 gpm	118 gpm	
11	3352	D	If you have a duplex single acting reciprocating pump making 150 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump?	91 gpm	26 gpm	104 gpm	52 gpm	

11	3353	B	If you have a duplex double acting reciprocating pump making 110 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump?	49 gpm	98 gpm	33 gpm	25 gpm	
11	3354	A	The purpose of the water failure switch in a refrigeration system is to react to a loss of cooling water by _____.	stopping the compressor	bypassing refrigerant to the receiver	closing the high pressure cutout switch	opening the high pressure cutout switch	
11	3355	B	If a block and tackle arrangement were rigged as shown in figure "F" in the illustration, the amount of force "P" required to hold the 400 pound load stationary would be _____.	80 lbs.	100 lbs.	133 lbs.	200 lbs.	GS-0110
11	3356	B	If you have a duplex single acting reciprocating pump making 160 strokes/minute, with a 4" diameter cylinder, a 12" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump?	44 gpm	89 gpm	178 gpm	266 gpm	
11	3357	A	You should never watch the arc generated during electric arc welder with the naked eye because _____.	serious flash burns will result	arc blow will burn your face	the fumes are highly toxic	slag and metal splatter will get in your eyes	
11	3358	C	If you have a duplex single acting reciprocating pump making 170 strokes/minute, with a 8" diameter cylinder, a 13" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump?	695 gpm	214 gpm	428 gpm	856 gpm	
11	3359	D	What is the reading of the vernier micrometer caliper scale shown in figure "A" in the illustration?	0.2513 inch	0.2517 inch	0.2610 inch	0.2613 inch	GS-0083
11	3360	A	The valve labeled "A" in the illustrated system should be opened to_____. (See illustration GS-0162)	clean tanks once they are empty	thin the mud to reduce its weight	provide cooling for the diesel driven pump	all the above	GS-0162

11	3361	B	If you have a simplex double acting reciprocating pump making 110 strokes/minute, with a 5" diameter cylinder, a 4" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump?	71 gpm	36 gpm	28 gpm	18 gpm	
11	3362	A	The lathe tool shown as figure "U" in the illustration is commonly known as a/an _____.	cutting-off tool	left cut side-facing tool	right side end facing tool	universal turning tool	GS-0090
11	3364	A	Evaporators and condensers are two forms of _____.	heat exchangers	liquid receivers	storage receptacles	flow inhibitors	
11	3365	A	If you have a duplex single acting reciprocating pump making 160 strokes/minute, with a 8" diameter cylinder, a 11" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump?	341 gpm	469 gpm	170 gpm	682 gpm	
11	3366	D	Which of the listed illustrated figures would not be used for rough or finish turning operations?	Figure T	Figure S	Figure P	Figure U	GS-0090
11	3367	A	Which of the illustrated lathe tools would be used to produce a smooth finish cut for figure I?	A	D	F	G	GS-0009
11	3368	A	The lathe tool shown as figure "A" in the illustration is called a _____.	left cut finishing tool	round nose turning tool	right hand facing tool	right hand turning tool	GS-0009
11	3369	C	The lathe tool shown as figure "R" in the illustration would best be used to _____.	perform a right-cut rough turning operation	form a left-cut groove	form a right-cut square shoulder	perform a left-cut rough turning operation	GS-0090
11	3370	C	Which of the illustrated lathe tools would be used to produce a rough cut for figure I?	B	C	F	G	GS-0009
11	3371	D	Which of the listed illustrated figures represents the lathe tool used for facing figure VI?	A	B	C	F	GS-0009
11	3372	D	Which of the listed illustrated figures represents the lathe tool used for facing figure VI?	A	B	C	F	GS-0009

11	3373	D	The lathe tool shown as figure "S" in the illustration is commonly known as a/an _____.	right-cut roughing tool	left-cut side-facing tool	right-cut side-facing tool	left-cut roughing tool	GS-0090
11	3374	B	A secondary refrigerant commonly used in shipboard air conditioning systems is _____.	methyl chloride	water	carbon dioxide	trichloroethylene	
11	3375	C	If you have a duplex double acting reciprocating pump making 110 strokes/minute, with a 7" diameter cylinder, a 8" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump?	133 gpm	152 gpm	267 gpm	67 gpm	
11	3376	A	If you have a simplex single acting reciprocating pump making 140 strokes/minute, with a 5" diameter cylinder, a 7" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump?	39 gpm	157 gpm	78 gpm	110 gpm	
11	3377	D	While carrying out electric arc welding, there is always the danger of _____.	developing burns to the retina of the eye	fire	electric shock	all of the above	
11	3378	C	If you have a duplex single acting reciprocating pump making 150 strokes/minute, with a 5" diameter cylinder, a 11" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump?	262 gpm	60 gpm	119 gpm	238 gpm	
11	3380	C	Which of the illustrated lathe tools would be used to produce a rough cut for figure I?	B	C	F	G	GS-0009
11	3381	D	A lubricating oil with a high viscosity index number is most effectively used _____.	in only very high temperature installations	as an additive to depress pour point	as an additive to slow oxidation	where a wide variaton range in temperature exist	

11	3382	D	If you have a simplex single acting reciprocating pump making 180 strokes/minute, with a 4" diameter cylinder, a 13" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump?	216 gpm	108 gpm	352 gpm	54 gpm	
11	3383	A	If you have a duplex single acting reciprocating pump making 120 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 83% volumetric efficiency, what is the capacity of this pump?	38 gpm	76 gpm	80 gpm	169 gpm	
11	3384	C	The dehydrating agent normally used in a refrigeration system is _____.	slaked lime	sodium chloride	activated alumina	calcium chloride	
11	3385	B	If a block and tackle arrangement were rigged as shown in figure "F" in the illustration, the amount of force "P" required to hold the 398 pound load stationary would be _____.	97.8 lbs.	99.5 lbs.	104.5 lbs.	109.5 lbs.	GS-0110
11	3386	D	Coast Guard Regulations (46 CFR) require small electric storage tank-type hot water boilers, rated at no more than 600 volts, must be fitted with a temperature limiting device to prevent the water in the upper 25% of the tank from attaining a temperature higher than _____.	210°C	166°C	125°C	99°C	
11	3387	A	If you have a simplex single acting reciprocating pump making 150 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump?	35 gpm	44 gpm	87 gpm	73 gpm	
11	3388	D	Which of the illustrated lathe tools would be used to produce a rough cut to the left for the stock in figure IV?	C	D	E	F	GS-0009

11	3389	A	If you have a duplex double acting reciprocating pump making 180 strokes/minute, with a 3" diameter cylinder, a 11" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump?	91 gpm	45 gpm	167 gpm	23 gpm	
11	3390	C	The component labeled "B" in the illustration is the _____.	suction line	vent	fill line	fresh water sprinkler for fluidizing of pulverized material	GS-0163
11	3391	C	The illustration is drawn to a scale of 1/16 inch = 1 inch. What is the full size dimension of "X", if the scale lengths for "E" = 5/8", "F" = 1 3/8", "G" = 2 1/8", and "H" = 5 3/4"?	1.625 inches	0.359 inches	26.00 inches	92.00 inches	GS-0007
11	3392	D	If you have a duplex double acting reciprocating pump making 110 strokes/minute, with a 6" diameter cylinder, a 9" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump?	76 gpm	151 gpm	193 gpm	221 gpm	
11	3393	D	If item "1" shown in the illustration is a compound gage indicating zero psig while processed water is known to be discharging overboard, the _____.	unit is fouled and should be cleaned	unit is operating correctly	unit is in the oil discharge mode	compound gage needs to be replaced	GS-0153
11	3394	D	Which of the listed components for a refrigeration system is required for a two box system, but not for a one box system?	Hand expansion valve	Automatic expansion valve	High pressure cutout switch	Liquid line solenoid valve	
11	3395	C	The lathe tool shown as figure "L" in the illustration is commonly known as a/an _____.	boring tool	external threading tool	internal threading tool	universal turning tool	GS-0090
11	3396	A	If you have a simplex single acting reciprocating pump making 190 strokes/minute, with a 3" diameter cylinder, a 11" stroke and operating with 77% volumetric efficiency, what is the capacity of this pump?	25 gpm	98 gpm	49 gpm	181 gpm	

11	3397	D	If the distilling plant first stage absolute pressure is higher than normal, while the second stage absolute pressure remains satisfactory, the probable fault is due to _____.	loss of the distillate loop seal between the stages	priming in the second stage	failure of the brine pump	an air leak through a vacuum gage line in the first stage	
11	3398	C	If you have a simplex single acting reciprocating pump making 140 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump?	129 gpm	64 gpm	32 gpm	43 gpm	
11	3399	D	If you have a simplex single acting reciprocating pump making 170 strokes/minute, with a 3" diameter cylinder, a 12" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump?	109 gpm	54 gpm	217 gpm	27 gpm	
11	3400	D	Which of the illustrated lathe tools would be used to produce a rough cut to the left for the stock in figure IV?	C	D	E	F	GS-0009
11	3401	C	The lathe tool shown as figure "R" in the illustration is commonly known as a/an _____.	right-cut roughing tool	left-cut side-facing tool	right-cut side-facing tool	left-cut roughing tool	GS-0090
11	3402	D	If you have a duplex single acting reciprocating pump making 160 strokes/minute, with a 4" diameter cylinder, a 10" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump?	163 gpm	33 gpm	131 gpm	65 gpm	
11	3403	A	The lathe tool shown as figure "T" in the illustration is commonly known as a/an _____.	right-cut roughing tool	left-cut side-facing tool	right-cut side-facing tool	left-cut roughing tool	GS-0090
11	3404	A	The purpose of heating the oil in the sump of a secured refrigeration compressor is to _____.	reduce the absorption of refrigerant by the lubricating oil	prevent acidic pitting	remove entrained water	remove wax and gum	

11	3405	A	If you have a duplex double acting reciprocating pump making 110 strokes/minute, with a 8" diameter cylinder, a 11" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump?	479 gpm	240 gpm	329 gpm	120 gpm	
11	3406	D	If you have a simplex single acting reciprocating pump making 330 strokes/minute, with a 3" diameter cylinder, a 4" stroke and operating with 96% volumetric efficiency, what is the capacity of this pump?	78 gpm	39 gpm	52 gpm	19 gpm	
11	3407	D	If you have a simplex single acting reciprocating pump making 160 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 96% volumetric efficiency, what is the capacity of this pump?	47 gpm	188 gpm	94 gpm	78 gpm	
11	3408	A	Prior to testing the pyrometer circuit wiring for continuity with a multimeter, you should disconnect the pyrometer because _____.	the driving voltage of the meter batteries can damage the circuit meter	the pyrometer total resistance can damage the ohmmeter	the reactance of the pyrometer will give a false meter reading	meter current running through the pyrometer will permanently magnetize the pyrometer's pointer	
11	3409	D	If you have a simplex single acting reciprocating pump making 160 strokes/minute, with a7" diameter cylinder, a 8" stroke and operating with 97% volumetric efficiency, what is the capacity of this pump?	414 gpm	207 gpm	236 gpm	103 gpm	
11	3410	B	If you have a simplex single acting reciprocating pump making 180 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump?	119 gpm	30 gpm	60 gpm	104 gpm	

11	3411	B	If you have a duplex single acting reciprocating pump making 170 strokes/minute, with a 3" diameter cylinder, a 5" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump?	12 gpm	24 gpm	40 gpm	48 gpm	
11	3412	A	If you have a simplex single acting reciprocating pump making 120 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 83% volumetric efficiency, what is the capacity of this pump?	19 gpm	38 gpm	66 gpm	76 gpm	
11	3413	D	The illustration is drawn to a scale of 1/8 inch = 1 inch. What is the full size dimension of "X", if the scale lengths for "E" = 5/8", "F" = 1 3/8", "G" = 2 1/8", and "H" = 5 3/4"?	1.625 inches	0.719 inches	46.00 inches	13.00 inches	GS-0007
11	3414	B	When the solenoid valves in a refrigeration system have closed, the compressor will be stopped by the _____.	low water cutout	low pressure cutout	high pressure cutout	spring-loaded relief valve	
11	3415	D	If a block and tackle arrangement were rigged as shown in figure "F" in the illustration, the amount of force "P" required to hold the 468 pound load stationary would be _____.	103 lbs.	109 lbs.	113 lbs.	117 lbs.	GS-0110
11	3416	B	If you have a duplex double acting reciprocating pump making 180 strokes/minute, with a 5" diameter cylinder, a 7" stroke and operating with 98% volumetric efficiency, what is the capacity of this pump?	105 gpm	210 gpm	147 gpm	52 gpm	
11	3417	A	The component labeled "F" in the illustration is a _____.	differential valve	fill connection	pneumercator	support stanchion	GS-0163
11	3418	B	If you have a duplex double acting reciprocating pump making 120 strokes/minute, with a 5" diameter cylinder, a 12" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump?	113 gpm	225 gpm	270 gpm	56 gpm	

11	3419	A	The lathe tools shown as figure "M" in the illustration are commonly known as _____.	form tools	curvature cutting tools	parting tools	universal turning tools	GS-0090
11	3420	A	If you have a simplex single acting reciprocating pump making 140 strokes/minute, with a 3" diameter cylinder, a 9" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump?	18 gpm	72 gpm	36 gpm	109 gpm	
11	3421	D	The lathe tool shown as figure "N" in the illustration is commonly known as a/an _____.	hurling tool	curling tool	furling tool	knurling tool	GS-0090
11	3422	B	If you have a simplex single acting reciprocating pump making 220 strokes/minute, with a 3" diameter cylinder, a 5" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump?	59 gpm	15 gpm	29 gpm	49 gpm	
11	3423	D	The lathe tool shown as figure "O" in the illustration is commonly used for _____.	cutting-off	left hand side facing	right hand turning	grooving	GS-0090
11	3425	C	The rudder shown in the illustration is correctly termed a/an _____.	balanced rudder	unbalanced rudder	semi-balanced rudder	contra-guided rudder	GS-0131
11	3426	C	If you have a simplex single acting reciprocating pump making 190 strokes/minute, with a 5" diameter cylinder, a 7" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump?	170 gpm	85 gpm	42 gpm	119 gpm	

11	3427	C	Which of the following statements would apply to the principle of operation of the device shown in the illustration?	The pressure in chamber "I" is greater than the pressure in chamber "II", causing part "A" to close off, and force "C" into a closed position.	Continuing to hold down "E" will hold "A" off of its seat, allowing water to continuously flow from chamber "I" to chamber "III" via chamber "II".	Once "A" is reseated, the total force developed in chamber "I" will gradually rise to exceed the total force in chamber "II" and reseat "C" to stop water flow through unit.	"D" will be physically and directly raised by the movement of "E", forcing "C" to become unseated.	GS-0155
11	3428	C	A P-type trap and drain is used _____.	for all lavatory sink installations, as no other drain type is useable	whenever the 'gray' water drain system connection is mounted on the deck	whenever the 'gray' water drain system connection is mounted on the bulkhead	as a condensate drain for superheaters	
11	3429	D	If you have a simplex single acting reciprocating pump making 130 strokes/minute, with a 5" diameter cylinder, a 4" stroke and operating with 96% volumetric efficiency, what is the capacity of this pump?	18.2 gpm	19.2 gpm	20.2 gpm	21.2 gpm	
11	3430	C	In the diagram, shown in the illustration, the swing-check valve is represented by the item numbered _____.	1	2	3	4	GS-0125
11	3431	B	If you have a simplex single acting reciprocating pump making 140 strokes/minute, with a 4" diameter cylinder, a 11" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump?	157 gpm	39 gpm	79 gpm	217 gpm	
11	3432	D	The drains of lavatory sinks are fitted with P-type or S-type traps to _____.	reduce water velocity and minimize erosion	create a strong siphon effect	provide a cushion of water to reduce the effects of water hammer	provide a seal against sewer gas rising into the compartment	

11	3433	C	If you have a duplex single acting reciprocating pump making 140 strokes/minute, with a 5" diameter cylinder, a 6" stroke and operating with 83% volumetric efficiency, what is the capacity of this pump?	71 gpm	30 gpm	59 gpm	119 gpm	
11	3434	A	Refrigerant flow through a thermostatic expansion valve is greatest when the _____.	evaporator is warm and empty of refrigerant	evaporator is cold and empty of refrigerant	low side and high side pressures are equal	low side pressure and thermal element pressure equalize	
11	3435	C	The illustration is drawn to a scale of 1/4 inch = 1 inch. What is the full size dimension of "X", if the scale lengths for "E" = 5/8", "F" = 1 3/8", "G" = 2 1/8", and "H" = 5 3/4"?	1.625 inches	2.167 inches	6.500 inches	7.667 inches	GS-0007
11	3436	C	If you have a simplex single acting reciprocating pump making 190 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump?	109 gpm	54 gpm	27 gpm	95 gpm	
11	3437	D	In the diagram shown in the illustration, item "3" represents a _____.	relief valve	stop valve	gate valve	check valve	GS-0125
11	3438	A	If you have a simplex single acting reciprocating pump making 180 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump?	37 gpm	150 gpm	75 gpm	50 gpm	
11	3439	B	The purpose of the component labeled "F" in the illustration is to_____.	determine the level of remaining pulverized material	prevent damage to the slope sheets	bleed excess air from the top of the tank	maintain a minimum of 15 psia difference between the aeration unit and the top head	GS-0163

11	3440	B	Sewage treatment systems aboard U.S. inspected vessels must be approved by the _____.	Environmental Protection Agency	U.S. Coast Guard	American Bureau of Shipping	Underwriter's Laboratories	
11	3441	C	A constant pressure range is maintained in the potable water system of many vessels by using _____.	constant speed supply pumps	variable speed supply pumps	an air cushion in the hydro-pneumatic tank	a pressure regulator in the pressure tank discharge piping	
11	3442	C	If you have a simplex single acting reciprocating pump making 150 strokes/minute, with a 7" diameter cylinder, a 12" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump?	570 gpm	285 gpm	142 gpm	488 gpm	
11	3443	D	Which of the illustrated lathe tools should be used to produce the groove in the stock in figure VII?	B	D	E	G	GS-0009
11	3444	C	Prior to making repairs on an evaporator located in a large, multi-box refrigeration system, you should remove the refrigerant by _____.	pumping it from the system to a clean empty drum	draining the system through the purge valve connection	pumping all refrigerant to the receiver	exhausting it to the atmosphere	
11	3445	B	What type of valve is shown in the illustration?	Globe valve	Gate valve	Check valve	Butterfly valve	GS-0047
11	3446	D	If you have a duplex single acting reciprocating pump making 140 strokes/minute, with a 3" diameter cylinder, a 11" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump?	10 gpm	23 gpm	39 gpm	44 gpm	
11	3447	C	A vacuum differential is maintained in the distillate circuit between any two stages of a multiple stage distilling plant by the use of a/an _____.	steam trap	butterfly valve	loop seal	adjustable controller	
11	3448	B	If you have a duplex single acting reciprocating pump making 180 strokes/minute, with a 5" diameter cylinder, a 7" stroke and operating with 98% volumetric efficiency, what is the capacity of this pump?	147 gpm	105 gpm	52 gpm	210 gpm	

11	3449	D	If you have a simplex single acting reciprocating pump making 120 strokes/minute, with a 6" diameter cylinder, a 11" stroke and operating with 83% volumetric efficiency, what is the capacity of this pump?	37 gpm	47 gpm	57 gpm	67 gpm	
11	3450	D	Sacrificial zinc anodes are used on the saltwater side of heat exchangers to _____.	keep heat transfer surfaces shiny and clean	prevent rapid accumulation of marine growth	provide a protective coating on heat exchanger surfaces	reduce electrolytic action on heat exchanger metals	
11	3451	C	If the orifice in the loop seal of a flash evaporator were to become significantly enlarged through erosion, the _____.	distillate produced in the second stage would flow towards the first stage	evaporator absolute pressure would eventually equalize in both stages to that of the first stage	evaporator absolute pressure could eventually equalize in both stages to that of the second stage	salt water feed heater absolute pressure would increase to that of the evaporator second stage	
11	3452	D	An automatic solenoid dump valve should be set to trip if the evaporator produces distillate with salt content exceeding _____.	.05 gpg	.15 gpg	.20 gpg	.25 gpg	
11	3453	D	If you have a simplex single acting reciprocating pump making 140 strokes/minute, with a 3" diameter cylinder, a 13" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump?	105 gpm	52 gpm	227 gpm	26 gpm	
11	3454	D	In a refrigeration system, air is purged at the _____.	expansion valve	filter/drier	evaporator	condenser	
11	3455	B	If you have a duplex double acting reciprocating pump making 180 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump?	75 gpm	150 gpm	50 gpm	37 gpm	

11	3456	A	If you have a simplex single acting reciprocating pump making 140 strokes/minute, with a 5" diameter cylinder, a 6" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump?	32 gpm	129 gpm	64 gpm	77 gpm	
11	3457	D	Regarding the oily water separator shown in the illustration, what mode of operation is occurring if item "1" indicates a positive pressure?	The unit is operating in the processing mode and is currently separating emulsified bilge water.	The unit is operating in the bilge water removal mode separating the oil from the water as it flows through the unit.	The unit is operating in the purge mode and is only removing air from the upper level of the tank.	The unit is operating in the backflush mode causing any oil or air to be discharged to the oil slop tank.	GS-0153
11	3458	C	If you have a duplex double acting reciprocating pump making 180 strokes/minute, with a 4" diameter cylinder, a 13" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump?	108 gpm	352 gpm	216 gpm	54 gpm	
11	3459	A	If you have a simplex single acting reciprocating pump making 150 strokes/minute, with a 5" diameter cylinder, a 7" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump?	42 gpm	170 gpm	85 gpm	119 gpm	
11	3460	C	The function of item "6", as shown in the illustration, is to _____.	terminate the oil discharge mode	determine when backflushing is necessary	initiate the oil discharge mode	sense discharge temperature to control the operation of the internal heater	GS-0153
11	3461	B	Coast Guard Regulations (46 CFR) for bilge and ballast piping require that _____.	all oil and water tanks be connected to the bilge system	the bilge pumping system be operable under all practicable conditions	peak tanks and chain lockers have separate electric pumps	all of the above	

11	3462	A	If you have a simplex single acting reciprocating pump making 120 strokes/minute, with a 4" diameter cylinder, a 10" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump?	30 gpm	120 gpm	60 gpm	150 gpm	
11	3463	B	The illustration is drawn to a scale of 3/16 inch = 1 inch. What is the full size dimension of "X", if the scale lengths for "E" = 5/8", "F" = 1 3/8", "G" = 2 1/8"', and "H" = 5 3/4"?	1.078 inches	8.667 inches	30.667 inches	1.625 inches	GS-0007
11	3464	C	The safest and quickest method of adding refrigerant to a refrigeration system is to add the refrigerant through the _____.	discharge service valve as a vapor	suction service valves as a liquid	charging valve as a liquid	condenser relief valve as a vapor	
11	3465	B	The component labeled "E" in the illustration is a _____.	high level alarm/shutdown	equalization line with filter	differential safety line with a pressure regulating valve set for approximately 10.5 psig	fresh water inlet to fluidize the pulverized material	GS-0163
11	3466	B	If you have a simplex single acting reciprocating pump making 140 strokes/minute, with a 4" diameter cylinder, a 13" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump?	186 gpm	47 gpm	93 gpm	302 gpm	
11	3467	C	If you have a duplex double acting reciprocating pump making 250 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 79% volumetric efficiency, what is the capacity of this pump?	75 gpm	132 gpm	150 gpm	38 gpm	

11	3468	D	If you have a duplex double acting reciprocating pump making 330 strokes/minute, with a 3" diameter cylinder, a 4" stroke and operating with 96% volumetric efficiency, what is the capacity of this pump?	39 gpm	52 gpm	19 gpm	78 gpm	
11	3469	B	A solenoid operated distillate bypass valve is installed in the discharge line between a distilling plant and the potable water tanks to prevent _____.	excessively warm distillate from entering the potable tanks	salty distillate from reaching the potable tanks	overfilling and overflowing the potable tanks	contaminated water from leaving the potable tanks	
11	3470	D	If the distillate temperature is 150°F and the distillate salinity is 0.35 grains per gallon, the three-way solenoid trip valve should direct the distillate to the _____.	freshwater tanks	reserve feed tank	distilled water tank	bilge	
11	3471	B	Which of the following statements represents the basic principle of operation of an electrical salinity indicator?	Measures the hydrogen ion concentration.	Measures the electrical resistance of the water.	Determines the conductivity of the dissolved oxygen.	Measures the voltage of the chloride ions.	
11	3472	D	In a submerged tube evaporator, the automatic solenoid dump valve will trip if the salinity exceeds _____.	0.10 grains per gallon	0.15 grains per gallon	0.20 grains per gallon	0.25 grains per gallon	
11	3473	C	The compound gage shown in the illustration and labeled as item "1" indicates a slight vacuum while the unit is in the oil discharge mode. The separator is _____.	operating correctly without the need for any modification	fouled and needs cleaning	operating correctly, but requires the gage to be replaced	not operating correctly and also needs the gage to be replaced	GS-0153
11	3474	B	The best time to check the oil level in the compressor in a typical refrigeration system is when the compressor is stopped after a long period of running. This is because the _____.	oil has had time to mix properly with the refrigerant	refrigerant has had time to separate from the oil	oil trap has been able to return sufficient oil to the sump	oil heaters are secured; thereby, ensuring that a false level is not read	
11	3475	C	In the operation of a two-stage flash-type distilling plant, which of the pumps listed should be vented to the second stage shell in order to remove vapors from the pump suction?	Condenser circulating water pump	Feedwater heater drain pump	Distillate pump	Air ejector condenser drain pump	

11	3476	A	If you have a duplex single acting reciprocating pump making 180 strokes/minute, with a 6" diameter cylinder, a 11" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump?	206 gpm	378 gpm	103 gpm	412 gpm	
11	3477	C	If you have a simplex single acting reciprocating pump making 150 strokes/minute, with a 5" diameter cylinder, a 12" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump?	291 gpm	145 gpm	73 gpm	349 gpm	
11	3478	B	The first stage feedwater temperature and shell absolute pressure in a multistage flash evaporator is _____.	equal to the second stage feedwater temperature and shell absolute pressure	higher than the second stage feedwater temperature and shell absolute pressure	lower than the feedwater temperature and shell absolute pressure in the second stage	higher than the second stage feedwater temperature but at a lower shell absolute pressure	
11	3479	D	In a two stage flash evaporator, operating conditions in the second stage, as compared to the first stage, are _____.	higher temperature and higher absolute pressure	higher temperature and lower absolute pressure	lower temperature and higher absolute pressure	lower temperature and lower absolute pressure	
11	3480	D	In a flash evaporator, heated water under pressure is converted into vapor by suddenly _____.	increasing its temperature	increasing its velocity	decreasing its density	decreasing its pressure	
11	3481	D	Vapor is produced in a flash evaporator by introducing _____.	steam through heating coils	steam through cooling coils	heated water into a high pressure area	heated water into a low pressure area	
11	3482	A	Feedwater supplied to a flash type distilling plant will flash to vapor in the first-stage due to the flash chamber _____.	pressure being lower than the saturation pressure corresponding to the feedwater temperature	temperature being higher than the evaporation temperature of the supplied feedwater	heat exchange surfaces being directly in the path of the entering feedwater	orifices finely atomizing the heated feedwater entering the flash chamber	

11	3483	A	A flash type distilling plant is more efficient than a high pressure evaporator as _____. I. vaporization of the feed water occurs in a vacuum II. boiling of feed water occurs only once on the tube surfaces	I only	II only	Both I and II	Neither I nor II	
11	3484	B	When one belt of a multiple V-belt compressor drive requires replacement, all of the belts must be replaced, because _____.	the old belts would otherwise carry all the load	new belts are shorter than old belts	new belts have a tendency to slip	all the above	
11	3486	B	If you have a duplex single acting reciprocating pump making 180 strokes/minute, with a 5" diameter cylinder, a 13" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump?	388 gpm	149 gpm	75 gpm	298 gpm	
11	3487	C	If you have a simplex single acting reciprocating pump making 160 strokes/minute, with a 3" diameter cylinder, a 4" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump?	38 gpm	19 gpm	9 gpm	25 gpm	
11	3488	D	If you have a duplex single acting reciprocating pump making 140 strokes/minute, with a 4" diameter cylinder, a 11" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump?	217 gpm	39 gpm	157 gpm	79 gpm	
11	3489	D	If you have a simplex single acting reciprocating pump making 110 strokes/minute, with a 4" diameter cylinder, a 6" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump?	67 gpm	33 gpm	50 gpm	17 gpm	
11	3490	B	In a double-effect submerged tube evaporator, the brine density should be prevented from falling below 1.5/32nds to minimize _____.	scale formation on the tube nests	loss in capacity and economy	corrosion in the evaporator	carryover in the evaporator	

11	3491	B	In a double-effect submerged tube evaporator, the brine density should be prevented from falling below 1.5/32nds to minimize _____.	scale formation on the tube nests	loss in capacity and maintain plant efficiency	corrosion in the evaporator	carryover in the evaporator	
11	3492	D	In the operation of a two-stage flash type distilling plant, the rate of scale formation is greatly reduced by _____.	operating the unit at its rated capacity	maintaining a relatively high feedwater temperature	the fact that the first-stage regulator keeps the heater shell at a constant pressure	the fact that no boiling occurs on heat transfer surfaces anywhere in the unit	
11	3493	C	The rate of scale formation in a flash type distilling plant is greatly reduced by _____.	operating the unit at its rated capacity	maintaining a relatively high feedwater temperature	water flashing into vapor rather than boiling on the heat transfer surfaces	operating the first-stage regulator to maintain a constant shell pressure	
11	3494	B	A common secondary refrigerant used in air conditioning systems aboard ship is _____.	R-123	water	nitrogen	Carrene	
11	3495	D	A high reading is indicated at the salinity cells labeled "Y", "Q", and "6" shown in the illustration. This would be the probable result of _____.	a leak in item"I"	faulty cells at each location	erosion of item "2"	carryover in first effect shell	GS-0053
11	3496	C	If you have a simplex single acting reciprocating pump making 190 strokes/minute, with a 3" diameter cylinder, a 13" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump?	113 gpm	57 gpm	28 gpm	246 gpm	
11	3497	B	A high reading is only indicated at the salinity cells labeled "W" and "6" shown in the illustration. This would be the probable result of _____.	a tube leak in item 'IV', which contributes to a surging absolute pressure in "III"	a faulty cell at location "6" and a tube leak in item 'IV'	erosion of item "3" or the valve opened too wide if used	carryover from "III"	GS-0053
11	3498	D	Scale accumulation on evaporator heating surfaces will cause _____.	immediate loss of vacuum	increased distillate quality	immediate tube failure	reduced evaporator capacity	

11	3499	A	If you have a duplex single acting reciprocating pump making 150 strokes/minute, with a 7" diameter cylinder, a 12" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump?	285 gpm	488 gpm	142 gpm	570 gpm	
11	3500	D	If the rated distillate production of a submerged tube type evaporator cannot be maintained with the supplied maximum steam flow rate, the evaporator _____.	chemical feed must be increased	has a serious brine leak	temperature switch is defective	heating surfaces are scaled	
11	3501	D	If you have a simplex single acting reciprocating pump making 120 strokes/minute, with a 6" diameter cylinder, a 7" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump?	189 gpm	95 gpm	110 gpm	47 gpm	
11	3502	D	The purpose of the component labeled "E" in the illustration is to _____.	determine the level of pulverized material	relieve pressure if the compressed air flow rate exceeds 600 CFM	equalize the pressure between the top of the tank and the aeration device when discharging material	equalize pressure on either side of the slope sheet when filling tank	GS-0163
11	3503	C	If you have a duplex single acting reciprocating pump making 190 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 88% volumetric efficiency, what is the capacity of this pump?	41 gpm	164 gpm	82 gpm	55 gpm	
11	3504	B	If atmospheric pressure decreases while the air temperature remains constant, the air will _____.	give up moisture as condensation	have greater capacity to absorb moisture	become supersaturated at high relative humidity	absorb less free atmospheric moisture	
11	3505	C	When any low pressure distilling plant is operated at less than the designed vacuum, the _____.	heat level drops	capacity increases	scale formation increases	distillate purity increases	

11	3506	D	If you have a simplex single acting reciprocating pump making 190 strokes/minute, with a 5" diameter cylinder, a 10" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump?	281 gpm	141 gpm	281 gpm	70 gpm	
11	3507	B	If you have a simplex single acting reciprocating pump making 150 strokes/minute, with a 5" diameter cylinder, a 11" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump?	56.6 gpm	59.6 gpm	68.5 gpm	119.2 gpm	
11	3508	B	If you have a simplex single acting reciprocating pump making 160 strokes/minute, with a 4" diameter cylinder, a 11" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump?	167 gpm	43 gpm	82 gpm	229 gpm	
11	3509	A	If the gap between the top of "B" and the facing area of "E" were to be reduced to half of the proper setting, the trap illustrated would tend to _____.	remain closed for a longer period of time	close slower than with the full gap	remain open for a longer period of time	open quicker than with full gap	GS-0002
11	3510	A	While the illustrated system is operated using the steam supply through "F" the strainer in line "4" becomes fouled, this will result in _____.	a reduction in distillate production	pump "K" becoming vapor bound	the temperature regulated by "L" difficult to maintain	nothing unusual for the type of operation indicated as this line was unnecessary in the installation	GS-0053
11	3511	B	If you have a duplex single acting reciprocating pump making 140 strokes/minute, with a 3" diameter cylinder, a 13" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump?	227 gpm	52 gpm	26 gpm	105 gpm	
11	3512	C	An excessively high brine level in a flash evaporator can be caused by _____.	excessive brine pump motor speed	an excessive brine blowdown rate	failure of the brine pump	excessive distillate pump speed	

11	3513	D	If you have a duplex double acting reciprocating pump making 120 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 83% volumetric efficiency, what is the capacity of this pump?	19 gpm	38 gpm	66 gpm	76 gpm	
11	3514	D	The refrigeration system valve shown in the illustration is used to control the _____.	box temperature	coil back pressure	'on-off' cycle of the compressor	superheat at the coil outlet	RA-0007
11	3515	A	If you have a simplex single acting reciprocating pump making 120 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump?	34 gpm	135 gpm	68 gpm	56 gpm	
11	3516	A	If you have a simplex single acting reciprocating pump making 230 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 78% volumetric efficiency, what is the capacity of this pump?	34 gpm	137 gpm	68 gpm	120 gpm	
11	3517	A	If you have a simplex single acting reciprocating pump making 170 strokes/minute, with a 4" diameter cylinder, a 11" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump?	45 gpm	181 gpm	91 gpm	249 gpm	
11	3518	C	If you have a simplex single acting reciprocating pump making 180 strokes/minute, with a 6" diameter cylinder, a 10" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump?	375 gpm	187 gpm	94 gpm	312 gpm	
11	3519	D	In a shell-and-tube type heat exchanger, the most common cause of decreased performance is _____.	loose tube bundle baffle plates	failure of the baffle plate	rupture of the tube bundle	fouling on the seawater side	

11	3520	B	If you have a duplex double acting reciprocating pump making 170 strokes/minute, with a 8" diameter cylinder, a 13" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump?	428 gpm	856 gpm	695 gpm	214 gpm	
11	3521	D	Demulsibility of lube oil is defined as _____.	the temperature at which oil flows rapidly	a measure of the water in a lube oil system	an emulsion of grades of oil	the ability of oil to separate from an oil and water emulsion	
11	3522	C	If you have a duplex single acting reciprocating pump making 140 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump?	526 gpm	113 gpm	226 gpm	451 gpm	
11	3523	C	What precaution should be taken when transporting oil based mud, with the system illustrated, as compared to water based mud?	The recirulation nozzles "T" need to be changed over to oil based nozzles.	The seachest valve "A" should be closed to prevent the oil from entering the water.	A spill containment area must be provided under the tank vent.	The tank must be provided with a protective coating no less than 20 mil thick.	GS-0162
11	3524	A	In a refrigeration system, the thermal expansion valve sensing bulb is located _____.	near the evaporator coil outlet	near the evaporator coil inlet	on the liquid line strainer	at the solenoid valve outlet	
11	3525	D	Some of the hazards of working with electric power tools may be avoided if the operator insures that _____.	they are properly grounded	eye shields and gloves are worn	loose clothing and jewelry are not worn	all of the above	
11	3526	B	If you have a duplex double acting reciprocating pump making 190 strokes/minute, with a 5" diameter cylinder, a 7" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump?	85 gpm	170 gpm	119 gpm	42 gpm	
11	3527	C	If a bolt or stud were to break off flush at the surface, which of the listed actions must be done to begin the process of its removal?	Tap the bolt with a starting punch extractor.	Heat the bolt with an oxyacetylene torch.	Drill a hole in the center of the broken stud.	Use a screw extractor only.	

11	3528	D	If you have a simplex single acting reciprocating pump making 180 strokes/minute, with a 4" diameter cylinder, a 9" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump?	157 gpm	78 gpm	176 gpm	39 gpm	
11	3529	A	When using a portable droplight, you should always insure that _____.	the bulb is protected by a shield or guard	the extension cord is yellow and clearly marked	the bulb capacity does not exceed 75 watts	all of the above	
11	3530	C	To properly use a lathe crotch center to drill an oil hole in a bushing, you would mount the crotch center in the _____.	compound rest	headstock	tailstock	chuck	
11	3531	B	If you have a simplex single acting reciprocating pump making 120 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump?	108 gpm	27 gpm	54 gpm	36 gpm	
11	3532	B	When machining a long piece of work between centers, you must _____.	make sure that the lathe dog is securely jammed in the slot of the face plate	correct for expansion of the work by readjusting the tailstock center	make sure that the work is only supported by the headstock center	make sure the tailstock is tight against the work	
11	3533	D	If you have a duplex single acting reciprocating pump making 140 strokes/minute, with a 4" diameter cylinder, a 13" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump?	302 gpm	47 gpm	186 gpm	93 gpm	
11	3534	C	In a direct expansion evaporator, the coils are _____.	covered with insulation	half covered with insulation	surrounded by air	surrounded by water	
11	3535	C	To ensure the stock is running true in a lathe, you should use a _____.	center gage	gage block	dial indicator	micrometer	

11	3536	C	If you have a simplex single acting reciprocating pump making 180 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 98% volumetric efficiency, what is the capacity of this pump?	216 gpm	108 gpm	54 gpm	90 gpm	
11	3537	C	If you have a duplex double acting reciprocating pump making 190 strokes/minute, with a 5" diameter cylinder, a 11" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump?	160 gpm	352 gpm	320 gpm	80 gpm	
11	3538	A	If you have a simplex single acting reciprocating pump making 160 strokes/minute, with a 6" diameter cylinder, a 9" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump?	75 gpm	300 gpm	150 gpm	225 gpm	
11	3539	A	To properly cut even numbered threads using the lathe thread dial indicator shown in the illustration, you should close the lathe split or half-nut on _____.	any line on the dial	even numbered lines only	odd numbered lines only	any unnumbered half line	GS-0084
11	3540	B	To properly cut an odd numbered thread with a lathe using the thread dial indicator illustrated, you should close the lathe split, or half-nut on _____.	any line on the dial	any numbered line on the dial	odd numbered lines only	even numbered lines only	GS-0084
11	3541	D	When using a wheel dressing tool to true up a grinding wheel, you should always _____.	lubricate the dressing tool	operate the grinder in neutral	remove the tool rest from the grinder	wear goggles to protect your eyes	
11	3542	C	The operation of machining a uniformly roughened or checked surface on round stock in a lathe is called _____.	checkering	crosshatching	knurling	swaging	

11	3543	C	If you have a simplex single acting reciprocating pump making 140 strokes/minute, with a 4" diameter cylinder, a 8" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump?	115 gpm	57 gpm	28 gpm	115 gpm	
11	3544	B	A device used to hold open the refrigeration compressor suction valve during starting is called a _____.	discharge line bypass	cylinder unloader	suction line bypass	relief valve	
11	3545	B	If the point angle of a drill is less than 59°, the _____.	hole will be drilled too large	hole will take longer to drill	drill will not center properly	drill will cut undersized	
11	3546	A	If you have a duplex single acting reciprocating pump making 150 strokes/minute, with a 5" diameter cylinder, a 12" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump?	145 gpm	349 gpm	73 gpm	291 gpm	
11	3547	D	If you have a duplex single acting reciprocating pump making 190 strokes/minute, with a 3" diameter cylinder, a 13" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump?	246 gpm	28 gpm	113 gpm	57 gpm	
11	3548	C	If you have a simplex single acting reciprocating pump making 160 strokes/minute, with a 8" diameter cylinder, a 9" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump?	35 gpm	70 gpm	139 gpm	280 gpm	
11	3549	B	As the drill bit is being fed into a metal work piece, a squeaking sound from the tip of the bit indicates _____.	the bit is too large for the hole	the bit tip has not been properly ground	insufficient force has been applied on the drill bit	a continuous chip is being taken by the drill bit	
11	3550	A	In the illustration, line "D" is a/an _____.	hidden line	sectioning line	outline	phantom line	GS-0006

11	3551	B	If you have a duplex single acting reciprocating pump making 140 strokes/minute, with a 5" diameter cylinder, a 6" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump?	32 gpm	64 gpm	77 gpm	129 gpm	
11	3552	D	If you have a simplex single acting reciprocating pump making 190 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 88% volumetric efficiency, what is the capacity of this pump?	164 gpm	82 gpm	55 gpm	41 gpm	
11	3553	D	What does "G" represent in the illustration?	The type of material used for the piece.	A dimension tabulated elsewhere.	A reference note shown elsewhere.	The surfaces to be ground.	GS-0017
11	3554	C	The refrigeration piping component shown in the illustration is primarily used to _____.	prevent vibration of the compressor	connect refrigeration machinery and associated piping when there is a misalignment problem	reduce noise and vibration from traveling along the piping which could ultimately damage distant downstream equipment	all of the above	RA-0002
11	3555	D	Which of the following problems will cause a twist drill to cut improperly?	Improper lip clearance	Improper cutting angle	Improper clearance angle	All of the above	
11	3556	B	If you have a simplex single acting reciprocating pump making 170 strokes/minute, with a 5" diameter cylinder, a 9" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump?	226 gpm	57 gpm	113 gpm	204 gpm	
11	3557	A	If you have a duplex double acting reciprocating pump making 170 strokes/minute, with a 3" diameter cylinder, a 5" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump?	48 gpm	40 gpm	24 gpm	12 gpm	

11	3558	D	If you have a simplex single acting reciprocating pump making 120 strokes/minute, with a 5" diameter cylinder, a 9" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump?	169 gpm	84 gpm	152 gpm	42 gpm	
11	3559	C	A dimension line, as used in a drawing or blueprint, is represented by which of the figures shown in the illustration?	A	B	C	D	GS-0031
11	3560	B	The illustrated shaft has an overall length of 18 inches. If the diameter of "E" = 2.5" and "F" = 3.5", with an indicated radius of "R" = .125" and the length of the tapered section "X" is to be 8"; then the amount of tailstock offset should be _____.	0.1110"	0.5625"	0.6250"	1.1250"	GS-0133
11	3561	C	If you have a duplex single acting reciprocating pump making 140 strokes/minute, with a 5" diameter cylinder, a 11" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump?	270 gpm	246 gpm	123 gpm	62 gpm	
11	3562	D	If you have a simplex single acting reciprocating pump making 170 strokes/minute, with a 5" diameter cylinder, a 12" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump?	295 gpm	147 gpm	354 gpm	74 gpm	
11	3564	B	Which of the fluids listed is suitable for use as a secondary refrigerant?	Methyl alcohol	Brine	Carbon dioxide	Cuprous chloride	
11	3566	C	The crosshatch design on the end of piece "3" in the illustration shown indicates that _____.	the piece is screwed into piece #2	the piece is made of mild carbon steel	piece #3 is knurled in that area	piece #3 is made of stainless steel	GS-0020

11	3567	C	If you have a duplex single acting reciprocating pump making 170 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump?	30 gpm	119 gpm	60 gpm	104 gpm	
11	3568	C	If you have a duplex single acting reciprocating pump making 140 strokes/minute, with a 6" diameter cylinder, a 10" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump?	268 gpm	81 gpm	161 gpm	322 gpm	
11	3569	A	If you have a duplex single acting reciprocating pump making 180 strokes/minute, with a 3" diameter cylinder, a 11" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump?	45 gpm	167 gpm	23 gpm	91 gpm	
11	3570	A	If you have a simplex single acting reciprocating pump making 120 strokes/minute, with a 6 diameter cylinder, a 11" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump?	74 gpm	297 gpm	149 gpm	273 gpm	
11	3571	B	Baffles are provided in the main lube oil sump tank of the pressurized lube oil system, shown in the illustration, to _____.	create a dam effect to concentrate heavily contaminated oil in one area making it much easier to clean	allow more time for particulate matter to settle out of the oil before being pumped	remove all water entrained in the returning oil stream	maintain a constant viscosity source of oil at the pump suction	SE-0011
11	3572	B	If you have a duplex single acting reciprocating pump making 190 strokes/minute, with a 5" diameter cylinder, a 7" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump?	42 gpm	85 gpm	119 gpm	170 gpm	

11	3573	B	What precaution should be taken when transporting oil based mud, with the system illustrated, when compared to water based mud?	The recirulation nozzles "T" need to be changed over to oil based nozzles.	All tank cleaning and disposal must be done at an approved disposal pit.	The seal cage line valve "C" must be shifted to fresh water to prevent damage to the pump seal.	The tank must be coated with a protective covering no less than 20 mil thick.	GS-0162
11	3574	B	In a refrigeration system, silica gel is used in the _____.	condenser	dehydrator	liquid strainer	hygrometer	
11	3575	D	In the illustration shown, which of the lines are considered as 'visible lines' in blueprint reading?	The line indicated by letter "A" only.	The line indicated by letter "B" only.	The lines indicated by the letters "B" and "D".	The lines indicated by the letters "A" and "D".	GS-0033
11	3576	A	If you have a simplex single acting reciprocating pump making 160 strokes/minute, with a 6" diameter cylinder, a 13" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump?	113 gpm	453 gpm	227 gpm	491 gpm	
11	3577	D	Hidden edges in objects are represented in blueprints by _____.	a thin solid line	a thick solid line	dashed lines having alternating long and short dashes	dashed lines having approximately equal length dashes	
11	3578	D	If you have a simplex single acting reciprocating pump making 100 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 82% volumetric efficiency, what is the capacity of this pump?	62 gpm	31 gpm	55 gpm	16 gpm	
11	3580	D	Line "C" as shown in the illustration represents _____.	the diameter of the hole	a mechanical connection between the two items illustrated	a hidden line	the center of the items illustrated	GS-0033
11	3581	B	If you have a simplex single acting reciprocating pump making 180 strokes/minute, with a 5" diameter cylinder, a 13" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump?	298 gpm	75 gpm	149 gpm	388 gpm	

11	3582	B	If you have a simplex single acting reciprocating pump making 130 strokes/minute, with a 4 diameter cylinder, a 12" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump?	158 gpm	39 gpm	79 gpm	237 gpm	
11	3583	D	In a schematic drawing, when an edge of a component is indicated as being located inside an enclosure, which line should be used?	A	B	C	D	GS-0031
11	3584	A	The primary purpose of a thermostatic controlled solenoid valve used in a multi box refrigeration system is to _____.	control the refrigerated compartment temperature	bypass refrigerant flow to the evaporator	maintain the proper refrigerant superheat	stop the compressor when the evaporator reaches the proper temperature	
11	3585	A	The illustration shown represents a blueprint of a metal _____.	rod with a conventional break	tube with a broken out section	pipe with a missing center section	bar with a sawn out section	GS-0028
11	3586	B	If you have a simplex single acting reciprocating pump making 160 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 96% volumetric efficiency, what is the capacity of this pump?	526 gpm	132 gpm	263 gpm	614 gpm	
11	3587	D	In the illustration which of the pair of letters represent the same physical features of the device shown?	B and C	A and D	A and B	B and D	GS-0033
11	3588	A	If you have a simplex single acting reciprocating pump making 170 strokes/minute, with a 3" diameter cylinder, a 5" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump?	12 gpm	48 gpm	24 gpm	40 gpm	
11	3589	B	A 'centerline' depicted in a drawing or blueprint is represented by which of the figures shown in the illustration?	A	E	D	C	GS-0031

11	3590	B	Cracks may be prevented from developing at the corners of welded plate inserts by _____.	squaring the corners	rounding the corners	plug welding the corners	slot welding the corners	
11	3591	B	The exploded drawing shown in the illustration is intended to show the _____.	total number of parts in the assembled component	parts aligned for the correct order of reassembly	disassembled component in a one point perspective view	parts without using hidden lines	GS-0025
11	3592	B	If you have a duplex double acting reciprocating pump making 190 strokes/minute, with a 3" diameter cylinder, a 13" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump?	57 gpm	113 gpm	246 gpm	28 gpm	
11	3593	C	If you have a simplex single acting reciprocating pump making 190 strokes/minute, with a 5" diameter cylinder, a 11" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump?	320 gpm	160 gpm	80 gpm	352 gpm	
11	3594	B	The purpose of running a refrigeration compressor motor in short intermittent spurts when starting the system after a prolonged shutdown is to _____.	allow refrigerant vapor cycling time	insure proper operation of the compressor	let the refrigerated compartment cool gradually	determine actual compressor oil level	
11	3595	A	The definition of superheat refers to the amount of heat necessary to raise the temperature of a substance and applies to _____. I. vapors II. Solids	I only	II only	Both I and II	Neither I nor II	
11	3596	C	If you have a simplex single acting reciprocating pump making 160 strokes/minute, with a 7" diameter cylinder, a 13" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump?	603 gpm	301 gpm	151 gpm	560 gpm	

11	3597	C	If you have a simplex single acting reciprocating pump making 120 strokes/minute, with a 4" diameter cylinder, a 13" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump?	20 gpm	29 gpm	39 gpm	50 gpm	
11	3598	B	If you have a simplex single acting reciprocating pump making 170 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump?	119 gpm	30 gpm	60 gpm	104 gpm	
11	3599	D	A hidden line in a drawing, or blueprint is represented in the illustration by which of the labeled lines?	A	B	C	D	GS-0031
11	3600	D	The letter "B" shown in the illustration represents _____.	the minor diameter of threads to be machined	a blind hole	a continuous square hole	only hidden lines	GS-0033
11	3601	A	In the illustration, line "C" is a _____.	dimension line	leader line	cutting plane line	phantom line	GS-0006
11	3602	C	If you have a simplex single acting reciprocating pump making 120 strokes/minute, with a 5" diameter cylinder, a 6" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump?	109 gpm	54 gpm	27 gpm	65 gpm	
11	3603	D	By which of the listed methods may heat be transferred from one body to another?	Radiation	Convection	Conduction	All of the above	
11	3604	C	If only the chill box solenoid valve remains open, the refrigeration compressor will eventually be stopped by _____.	chill box thermostatic temperature switch	low water cutout switch	low pressure cutout switch	high pressure cutout switch	
11	3606	D	Careful handling of compressed gas bottles should include _____.	stowing, to avoid them from crashing into one another	keeping them away from flame, high heat, and direct sunlight	keeping the valve protection caps in place	all of the above	

11	3607	D	Heat may be transferred by _____.	conduction	convection	radiation	all of the above	
11	3608	C	How many BTUs must be added to one pound of water at 32°F to raise the temperature to 212°F?	16 BTU's	144 BTU's	180 BTU's	970 BTU's	
11	3609	D	If you have a simplex single acting reciprocating pump making 150 strokes/minute, with a 7" diameter cylinder, a 9" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump?	26.7 gpm	53.4 gpm	80.1 gpm	106.8 gpm	
11	3610	D	The action of water being circulated within a natural circulation boiler, is an example of what form of heat transfer?	Radiation	Conduction	Forced convection	Natural convection	
11	3611	A	While reaming a hole, the reamer should not be turned backwards if the hole has not been fully reamed because _____.	the cutting edges may be damaged	turning in the wrong direction will cause chatter	the shank will loosen in the tap wrench	reverse rotation will make the hole oversize	
11	3612	D	If you have a simplex single acting reciprocating pump making 120 strokes/minute, with a 6 diameter cylinder, a 14" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump?	378 gpm	189 gpm	441 gpm	95 gpm	
11	3613	B	If your vessel burns 8 tons of fuel per hour at 15 knots, how many tons per hour will it burn at 18 knots?	9.6 tons	13.8 tons	9.5 tons	11.5 tons	
11	3614	B	When two refrigerated spaces in a refrigeration system are served by a single compressor and condenser, yet are maintained at different temperatures, a back pressure regulating valve serves to provide _____.	a higher pressure in the evaporator coil in the colder box	a higher pressure in the evaporator coil in the warmer box	a lower pressure in the evaporator coil in the warmer box	equal pressures in the evaporator coils of both boxes	
11	3615	C	Which of the following conditions must be carried out before the superheating of saturated vapor can occur?	The evaporation rate must be increased.	The flow of liquid to the unfired pressure vessel must be increased.	The vapor must be removed from contact with the liquid from which it was generated.	The operating pressure must be raised.	

11	3616	C	Which of the following practices is considered to be safe for the handling and use of compressed gas cylinders?	Using oxygen as a substitute for compressed air for pneumatic tools.	Routinely greasing or lubricating the valves on oxygen cylinders.	The storage of the cylinders in a well ventilated compartment.	Cracking the valve on a hydrogen cylinder to clear dust and dirt.	
11	3617	D	After a piece of pipe has been cut, a good shop practice to ream out the burr left in the pipe. This is done to _____.	make a taper for starting the threading die	make the taper required for pipe threads	remove tool marks which could interfere with flow	prevent the burr from restricting flow in the pipe	
11	3618	C	If you have a duplex double acting reciprocating pump making 180 strokes/minute, with a 5" diameter cylinder, a 8" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump?	106 gpm	170 gpm	213 gpm	53 gpm	
11	3619	A	An eroded globe valve disk can be repaired by _____.	taking a light cut in a lathe	sandblasting with light weight grit	dressing the seat with crocus cloth	scraping with a bastard file	
11	3620	B	A graphite additive type grease is best suited for _____. I. low temperature applications II. high temperature applications	I only	II only	Both I and II	Neither I nor II	
11	3621	A	If a block and tackle arrangement were rigged as shown in figure "F" in the illustration, the amount of force "P" required to hold the 508 pound load stationary would be _____.	127 lbs.	145 lbs.	169 lbs.	203 lbs.	GS-0110
11	3622	B	The proper tool used for cutting new external threads is called a thread _____.	chaser	die	broach	tap	
11	3623	C	Which of the figures illustrated is known as an Allen head set screw?	figure B	figure C	figure F	figure G	GS-0080
11	3624	D	In a vapor compression type refrigeration cycle, the refrigerant temperature decreases the most when passing through the _____.	evaporator	condenser receiver	compressor	expansion valve	

11	3625	A	If you have a simplex single acting reciprocating pump making 120 strokes/minute, with a 8 diameter cylinder, a 13" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump?	156 gpm	625 gpm	312 gpm	507 gpm	
11	3626	A	Oxygen and acetylene cylinders should always be stored _____.	upright with the cylinder caps screwed on	horizontal with the cylinder caps screwed on	upright with the cylinder caps off	horizontal with the cylinder caps off	
11	3627	A	When internal threading for piping where the work permits the tap to be run entirely through you can begin and end the tapping of the hole by using a _____.	taper tap	plug tap	bottoming tap	finishing tap	
11	3628	D	If you have a duplex single acting reciprocating pump making 190 strokes/minute, with a 5" diameter cylinder, a 11" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump?	352 gpm	80 gpm	320 gpm	160 gpm	
11	3629	A	After a piece of pipe is cut, the opening in the end should be cleaned out with a _____.	pipe reamer	pipe cleaner	taper tool	hole cleaner	
11	3630	D	When refering to greases, penetration number is_____.	how many seconds was required for a cone to penetrate the sample	the temperature at which a cone would begin to penetrate the sample	the temperature at which the grease would become sufficiently fluid to fill the voids of a standard ball bearing	the depth to which a cone would penetrate a sample of grease in 5 seconds	
11	3631	A	The working depth of the gear illustrated is represented by _____.	A	B	C	I	GS-0111
11	3632	D	The purpose of the wearing ring used in the illustrated pump is to _____.	support the suction end of the impeller	provide an interference fit for the impeller	provide a replaceable wear surface for the shaft	provide a replaceable wear surface for the pump housing	GS-0012

11	3633	D	The function of seal cages, or lantern rings installed in the centrifugal pump stuffing boxes, is to _____.	cool the shaft	lubricate the packing	seal air from entering along the shaft	distribute the sealing liquid within the stuffing box	
11	3634	D	If the compressor is heard to knock while pumping down the low side for repairs, this is an indication of _____.	worn piston rings	faulty bearings	air being introduced to the system	foaming of the crankcase oil	
11	3635	C	Internal pipe threads are cut with _____.	dies	reamers	taps	tap drills	
11	3636	D	Pressure-relief devices on gas welding cylinders are located in _____.	the cylinder valve	the shoulder of the cylinder	the bottom of the cylinder	all of the above	
11	3637	C	When using a hand die to cut threads on brass stock, the threads can be dry cut or may be lubricated with _____.	graphite and oil	white lead	lard oil	kerosene	
11	3638	B	If you have a duplex single acting reciprocating pump making 180 strokes/minute, with a 4" diameter cylinder, a 12" stroke and operating with 80% volumetric efficiency, what is the capacity of this pump?	282 gpm	94 gpm	47 gpm	188 gpm	
11	3639	B	If you have a simplex single acting reciprocating pump making 120 strokes/minute, with a 4 diameter cylinder, a 12" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump?	144 gpm	36 gpm	72 gpm	216 gpm	
11	3640	D	When pipe is properly screwed into a tapped hole, it will give the correct fit when _____.	the pipe cannot be turned	all the threads are covered	half of the threads are covered	all but two or three threads are covered	
11	3641	D	A centrifugal pump designed to handle a liquid with a temperature of 250°F or greater must be provided with _____.	a semi-mechanical seal	helical grooved wearing rings	self adjusting packing	a liquid seal line	
11	3642	A	If you have a duplex single acting reciprocating pump making 190 strokes/minute, with a 4" diameter cylinder, a 13" stroke and operating with 77% volumetric efficiency, what is the capacity of this pump?	103 gpm	336 gpm	52 gpm	207 gpm	

11	3643	B	The primary function of a centrifugal pump volute is to _____.	develop a high velocity liquid	convert velocity to pressure	limit hydraulic end thrust	initiate flow	
11	3644	A	In the refrigeration system shown in the illustration, which of the valves indicated should be used to purge the system?	A	B	C	D	RA-0012
11	3645	A	A centrifugal pump with a double volute casing operated at greater than design capacity, will _____.	be less susceptible to shaft deflection than a similar pump with a single volute casing operated under the same conditions	be more susceptible to shaft deflection than a similar pump with a single volute casing operated under the same conditions	develop excessive radial thrust and resultant shaft deflection	develop excessive radial thrust and resultant impeller deflection	
11	3646	C	If you have a duplex single acting reciprocating pump making 160 strokes/minute, with a 6" diameter cylinder, a 13" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump?	491 gpm	113 gpm	227 gpm	453 gpm	
11	3647	C	In the illustration, a hole is shown in the block. The shape of the hole is indicated as a _____.	blind hole with a 3/4" depth	tapered hole	1.5 inch diameter fully bored hole	hole layed out for boring, but not completed until needed	GS-0021
11	3648	C	If you have a duplex single acting reciprocating pump making 110 strokes/minute, with a 5" diameter cylinder, a 4" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump?	28 gpm	18 gpm	36 gpm	71 gpm	
11	3649	B	When repacking a reciprocating pump with more than four rings of packing, the packing is cut square, installed with the ends abutted, and each succeeding ring staggered with the butted ends _____.	45° apart	90° apart	120° apart	180° apart	

11	3650	B	Which of the following problems will occur when the suction valve is throttled on a centrifugal pump not designed to operate in this manner?	The pump will immediately overheat and seize.	Pump efficiency is reduced and cavitation will be induced.	The pump packing will fail causing irrepairable damage to the pump shaft.	Pump capacity is reduced and overall efficiency will be increased.	
11	3651	D	If you heard a 'crackling' sound occuring within a centrifugal pump, the most probable source of the noise would be the _____.	shaft sleeves	discharge volutes	wearing rings	pump suction	
11	3652	C	If you have a duplex single acting reciprocating pump making 120 strokes/minute, with a 6 diameter cylinder, a 11" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump?	273 gpm	74 gpm	149 gpm	297 gpm	
11	3653	D	If the flow of water from a centrifugal pump is allowed to be stopped by closing the discharge valve while the pump continues to run for an indefinite period, the _____.	relief valve will open	water pressure will lower continually to shut off head	water pressure will tend to rise continuously	liquid may overheat and vaporize	
11	3654	B	Which of the valves listed is normally closed when charging the refrigeration system through the high side?	Dehydrator inlet valve	Liquid line king valve	Suction line valve	Thermal expansion valve	
11	3655	C	The illustrated device is in operation when _____.	the output at "B" is providing negative feedback of the manipulated variable to the pressure differential relay	the output at "B" is providing positive feedback of the manipulated variable to the force balance relay	suction of the transferred liquid occurs at "G" and discharge at "B"	suction of the transferred liquid occurs at "B" and discharge at "G"	GS-0061

11	3656	D	If you have a duplex single acting reciprocating pump making 140 strokes/minute, with a 5" diameter cylinder, a 7" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump?	110 gpm	39 gpm	157 gpm	78 gpm	
11	3658	D	If you have a duplex single acting reciprocating pump making 160 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 96% volumetric efficiency, what is the capacity of this pump?	614 gpm	132 gpm	526 gpm	263 gpm	
11	3659	B	One of the functions of the component labeled "E" shown in the illustration is to _____.	act as a cyclonic oil separator	separate oil from discharged compressed air	separate the oil-water emulsions removed from the bilges	provide storage for compressed cryogenic gases	GS-0119
11	3660	B	As demand on the device shown in the illustration fluctuates in the pressure range of 100 to 110 psi, the output of the unit is controlled by _____.	complete shut down until the lower pressure limit is reached causing it to restart	the modulation of the opening of a butterfly valve located in the air intake	change in control pressure to modulate the discharge of compressed air to the atmosphere	proportional modulation of the compressor speed	GS-0119
11	3661	B	Referring to the device shown in the illustration, the coiled sensing lines "A" and "B", are used simultaneously when the pilot is used _____.	to maintain a level in a tank vented to the atmosphere, pressurized, or operating under a vacuum	to maintain a tank level where there exists a variable vapor pressure atmosphere	as a square root extractor when variable ratios are present in the processing system	to maintain a constant flow differential across a turbine-driven, centrifugal pump	GS-0052
11	3662	D	If you have a duplex single acting reciprocating pump making 130 strokes/minute, with a 4 diameter cylinder, a 12" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump?	237 gpm	39 gpm	158 gpm	79 gpm	

11	3663	D	If a centrifugal pump is driven by a constant speed prime mover and produces a flow rate less than the designed specifications, the cause could be _____.	suction absolute pressure greatly exceeds corresponding vapor pressure of liquid being pumped	excessive suction head	pump packing gland misalignment	worn wearing rings	
11	3664	A	With a service gage manifold connected to a refrigeration compressor as illustrated, which arrangement of gage manifold valves and compressor service valves will allow compressor suction and discharge pressures to be read simultaneously?	Valves "A" and "B" closed, valves "C" and "D" open just off the back seats	Valves "A" and "B" open, valves "C" and "D" closed on their front seats	Valves "A" and "B" open and back seated, valves "C" and "D" back seated	Valves "A" and "B" open, valves "C" and "D" open in the midposition	RA-0003
11	3665	A	You suspect a problem with the centrifugal fire pump on your ship, and begin to slowly close the discharge valve. Your suspicion is confirmed when the _____.	discharge valve is closed off and there is no change in the discharge pressure	discharge valve is 80% closed and the relief valve lifts	suction valve is closed off, and the discharge pressure begins to decrease	suction valve is closed off, yet the relief valve does not lift	
11	3666	A	If you have a duplex single acting reciprocating pump making 160 strokes/minute, with a 7" diameter cylinder, a 13" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump?	301 gpm	560 gpm	151 gpm	603 gpm	
11	3667	A	The reset process control mode is also considered to be the same as _____. I. proportional speed floating control II. derivative control	I only	II only	Both I and II	Neither I nor II	
11	3668	A	If you have a duplex single acting reciprocating pump making 160 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 96% volumetric efficiency, what is the capacity of this pump?	94 gpm	78 gpm	47 gpm	188 gpm	
11	3669	D	The heat of compression is partially removed from compressed air by _____.	intercoolers	aftercoolers	compressor water jackets	all of the above	

11	3670	A	In the operation of a proportional-plus-reset controller, the proportional action _____. I. aids the reset action during increasing error transients II. and the reset action are completely independent of one another	I only	II only	Both I and II	Neither I nor II	
11	3671	B	The working components of a Bourdon tube pressure gage are shown in the illustration. When pressure is applied, the tube element will _____.	curl towards the center	uncurl from the center	expand only in a linear direction	contract along its linear axis	GS-0114
11	3672	B	If you have a duplex single acting reciprocating pump making 170 strokes/minute, with a 3" diameter cylinder, a 12" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump?	217 gpm	54 gpm	27 gpm	109 gpm	
11	3673	A	If you have a duplex single acting reciprocating pump making 120 strokes/minute, with a 4 diameter cylinder, a 13" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump?	78 gpm	254 gpm	39 gpm	156 gpm	
11	3674	D	When one belt of a multiple V-belt drive requires replacing, it will be necessary to _____.	ensure the proper belt dressing is applied	ensure the seasoned belts are reinstalled in their proper sequence	season the new belt prior to installation	replace the entire belt set	
11	3675	D	Intercooling of a multistage air compressor provides the advantages of reducing the work of compression on the succeeding stages, and _____.	condensing part of the original water vapor content	reducing the maximum piston loads	increasing the volumetric efficiency	all of the above	
11	3677	B	If the intercooler of a low pressure air compressor becomes fouled either internally or externally, the _____.	total capacity will be reduced	volumetric efficiency will be decreased	discharge pressure will decrease	normal running time will be decreased	

11	3678	B	If you have a duplex single acting reciprocating pump making 140 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump?	43 gpm	64 gpm	32 gpm	129 gpm	
11	3679	A	As a general rule of thumb, the reservoir used in a hydraulic system should have a capacity, when at the normal level, approximately equal to _____.	two to three times the normal flow rate through the system	the flow rate through the system	ten times the flow rate through the system	the pump gpm	
11	3680	D	Hydraulic system reservoirs should be maintained at recommended normal levels to reduce _____.	condensation on inside walls	heat retention of working fluid	frequency of fluid changeover	all of the above	
11	3681	B	The approximate quantity of hydraulic oil available to the system can be determined by _____.	removing "G" and measuring the level in the sump	observing the color change of "J"	removing "D" and measuring the height of the remaining liquid	removing the cap from "A" and measuring the height of the hydraulic oil	GS-0118
11	3682	B	If you have a simplex single acting reciprocating pump making 170 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump?	519 gpm	130 gpm	259 gpm	605 gpm	
11	3683	B	One of the functions of the component labeled "E", shown in the illustration, is to _____.	act solely as a heat exchanger	act as a lube oil sump	provide storage for compressed cryogenic gases	act as a cyclonic oil separator	GS-0119
11	3684	B	The refrigeration system valve illustrated has a 'back seat', indicated by the part labeled '____.'	B	C	E	G	RA-0008
11	3685	B	If you have a duplex single acting reciprocating pump making 120 strokes/minute, with a 6 diameter cylinder, a 14" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump?	441 gpm	189 gpm	95 gpm	378 gpm	

11	3686	C	If you have a duplex single acting reciprocating pump making 160 strokes/minute, with a 4" diameter cylinder, a 11" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump?	229 gpm	42 gpm	83 gpm	167 gpm	
11	3687	D	The volumetric efficiency of a reciprocating air compressor, is the ratio of the _____.	adiabatic work of compression to the indicated horsepower	work of isothermal compression to the brake horsepower of the motor	air indicated horsepower from indicator cards to the brake horsepower input	actual amount of air discharged by the compressor, to the theoretical volume swept by the movement of the compressor piston	
11	3688	C	If you have a duplex single acting reciprocating pump making 160 strokes/minute, with a 7" diameter cylinder, a 8" stroke and operating with 97% volumetric efficiency, what is the capacity of this pump?	236 gpm	103 gpm	207 gpm	141 gpm	
11	3689	A	The trap illustrated operates as a _____.	thermostatic bellows type steam trap	thermodynamic bellows type steam trap	thermostatic bi-metalic bellows type steam trap	thermodynamic float type steam trap type steam trap	GS-0005
11	3690	A	The position of the controlling diaphragm "E", shown in the illustration of the spring-loaded reducing valve, is determined by the _____.	downward force of the adjusting spring "F" and the upward force of the reduced steam pressure acting on diaphragm "E"	adjusting screw "G" force exerted on the adjusting spring "F" and the auxiliary valve "D" only	amount of high pressure steam admitted beneath the diaphragm "E" by the auxiliary valve "D"	equalizing pressures exerted on auxiliary valve "D" by high pressure steam and reduced pressure steam flow	GS-0044

11	3691	A	In a typical hydraulic system, return lines to the reservoir are terminated below the normal oil level to prevent _____. I. foaming of the oil II. condensation of warm oil vapors upon return	I only	II only	Both I and II	Neither I and II	
11	3692	D	If you have a simplex single acting reciprocating pump making 140 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump?	91 gpm	45 gpm	79 gpm	23 gpm	
11	3693	C	The valve shown in the illustration is typically used for temperature control of a liquid being heated. Which of the following changes to this unit would be useful in converting the valve for use in controlling the temperature of a cooling system?	Change out parts "B" and 'J.'	Remove parts "D" and 'I.'	Exchange part "L" for one that is upward seated.	Exchange part "G" for a heavier force.	GS-0043
11	3694	C	In an atmosphere of 100% relative humidity, the wet bulb thermometer would register a temperature _____.	above the dry bulb temperature	below the dry bulb temperature	the same as the dry bulb temperature	above the dry bulb temperature, but below the saturation temperature	
11	3695	B	In a typical hydraulic system, return lines to the reservoir are _____. I. terminated at or just above the normal level II. placed as far from the pump suction as possible	I only	II only	Both I and II	Neither I and II	
11	3696	D	When pressure is released from a Bourdon tube-type pressure gage, it will begin to recoil. The reason for this action is due to the _____.	pressure on the arc AB	pressure on the arc DC	indicated spring tension	resiliancy of the tube material	GS-0114

11	3697	A	The mandatory operating characteristic of a pure amplifier is the _____. I. form of the input and output energy must be the same II. ratio of the output change to input change must be a value greater than 1 (one)	I only	II only	Both I and II	Neither I nor II	
11	3698	C	If you have a duplex single acting reciprocating pump making 120 strokes/minute, with a 8-inch diameter cylinder, a 13" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump?	507 gpm	156 gpm	312 gpm	625 gpm	
11	3699	A	The characteristic of 'offset' is inherent with which mode of control? I. proportional control II. reset control	I only	II only	Both I and II	Neither I nor II	
11	3700	B	In the operation of a proportional-plus-reset controller, the proportional action _____. I. and the reset action are completely independent of one another II. opposes reset action during decreasing error transients	I only	II only	Both I and II	Neither I nor II	
11	3701	A	A pneumercator measures the liquid level in a tank by sensing _____. I. head pressure II. liquid density	I only	II only	both I and II	neither I nor II	
11	3702	D	If you have a duplex single acting reciprocating pump making 140 strokes/minute, with a 3" diameter cylinder, a 9" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump?	109 gpm	18 gpm	72 gpm	36 gpm	
11	3703	C	In the operation of a proportional-plus-reset controller, the proportional action _____. I. opposes the reset action during decreasing error transients II. aids the reset action during increasing error transients	I only	II only	Both I and II	Neither I nor II	

11	3704	A	Which of the methods listed is most frequently used to control evaporator refrigerant flow rate in a shipboard refrigeration system?	Direct expansion with constant superheat	Indirect expansion with constant superheat	Low side float control	High side float control	
11	3705	C	Reset control is considered to be the same as _____. I. proportional speed floating control II. integral control	I only	II only	Both I and II	Neither I nor II	
11	3706	A	If you have a simplex single acting reciprocating pump making 250 strokes/minute, with a 3" diameter cylinder, a 5" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump?	17 gpm	68 gpm	34 gpm	57 gpm	
11	3708	C	If you have a simplex single acting reciprocating pump making 190 strokes/minute, with a 3" diameter cylinder, a 9" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump?	94 gpm	47 gpm	24 gpm	141 gpm	
11	3709	D	A compound Bourdon tube type pressure gage is capable of measuring _____.	temperature and pressure	wet bulb and dry bulb temperatures	humidity and temperature	pressure and vacuum	
11	3710	A	To ensure an accurate pneumercator reading, you should _____.	purge the balance chamber to remove any liquid	read the bottom of the mercury meniscus	take the reading with the operating cock in the vent position	make certain the tank has been bled of air	
11	3711	D	If you have a duplex single acting reciprocating pump making 120 strokes/minute, with a 4-inch diameter cylinder, a 12" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump?	216 gpm	36 gpm	144 gpm	72 gpm	
11	3712	D	The illustrated device is normally used to _____.	control the flow rate of liquid being removed from the tank	control the flow rate of liquid being discharged to the tank	regulate the pressure of the liquid being stored in the tank	provide a remote reading of the liquid stored in the tank	GS-0066

11	3713	B	In order for the hydraulic system to operate with fewer contaminents from the system's operating fluid, the illustrated device may _____.	be increased in height with all other dimensions remaining the same	have additional baffles installed	have the horizontal submerged section of the suction line lengthed	be increased in length and have the width narrowed	GS-0118
11	3714	D	When the sensing bulb of a thermostatic expansion valve is charged with a fluid different from the charge used in the system, it is said to be _____.	blended charged	straight charged	mixed charged	cross charged	
11	3715	A	Energy imparted to the hydraulic fluid in an operating hydraulic system is stored in the _____.	accumulator	actuator	ram	reservoir	
11	3716	D	The baffle plates installed in the oil reservoir of a hydraulic system serve to _____.	reduce fluid turbulence at the pump suction	minimizes the chance of return line contamination deposits from entering the pump suction	minimizes the probability of air being drawn into the pump suction	all of the above	
11	3717	B	In order for the hydraulic pump installed in a constant flow system to maintain adequate flow, the pump suction should _____.	be taken directly off the reservoir bottom without regard to filters or strainers	be arranged to develop a maximum vacuum of approximately 10" of mercury	be arranged to develop the theoretically maximum attainable vacuum	be provided with three to five 1/2 inch holes in the vertical, suction line to prevent pump starvation should the strainer become fouled	
11	3718	A	If you have a duplex double acting reciprocating pump making 140 strokes/minute, with a 3" diameter cylinder, a 13" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump?	105 gpm	52 gpm	227 gpm	26 gpm	
11	3719	D	The instrument used to indicate the level of a fluid in a tank is called a _____.	fluid meter	calorimeter	viscosimeter	pneumercator	

11	3720	B	If you have a simplex single acting reciprocating pump making 210 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 77% volumetric efficiency, what is the capacity of this pump?	123 gpm	31 gpm	62 gpm	108 gpm	
11	3721	B	Figure "C" in the illustration, is an improperly installed hose, with the restriction developed at the _____.	right hand fitting being small than required	center of the hose	sharp bend formed at the left	90° bend as required of the installation	GS-0063
11	3722	D	If you have a simplex single acting reciprocating pump making 250 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 79% volumetric efficiency, what is the capacity of this pump?	150 gpm	75 gpm	132 gpm	38 gpm	
11	3723	A	A hydraulic accumulator, used in a hydraulic system aboard a MODU, is designed to _____.	store fluid under pressure	act as the main fluid reservoir	provide the only means of overpressure relief	act as the singular source of fluid replenishment to a system	
11	3724	A	Regarding the refrigeration valve illlustrated, part "C" is the _____.	back seat	front seat	seal cap	normal discharge	RA-0008
11	3725	A	If you have a duplex single acting reciprocating pump making 120 strokes/minute, with a 6" diameter cylinder, a 11" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump?	149 gpm	273 gpm	149 gpm	273 gpm	
11	3726	B	If you have a duplex double acting reciprocating pump making 140 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump?	226 gpm	451 gpm	526 gpm	113 gpm	
11	3727	B	The component used in a hydraulic system to store potential energy in the form of hydraulic fluid under pressure, is the _____.	ram	accumulator	piping	pump	

11	3728	D	A reservoir is used in a hydraulic system to _____.	store fluid until required by the system	provide a place for air to separate out of the fluid	provide a place for contaminants to settle out	all of the above	
11	3729	C	Which of the devices listed is considered to be a hydraulic system directional control valve?	Unloading valve	Counterbalance valve	Detented position valve	Sequencing valve	
11	3730	B	Which of the devices listed would be considered a hydraulic system directional control valve?	Counterbalance valve	Offset, two position valve	Sequencing valve	Unloading valve	
11	3731	A	Which of the devices listed would be considered a hydraulic system directional control valve?	three-position valve	sequencing valve	unloading valve	counterbalance valve	
11	3732	C	If you have a duplex double acting reciprocating pump making 140 strokes/minute, with a 4" diameter cylinder, a 13" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump?	93 gpm	302 gpm	186 gpm	47 gpm	
11	3733	C	A valve installed in a hydraulic system to manipulate the reversal of fluid flow, is called a _____.	relief valve	reservoir valve	directional control valve	regenative valve	
11	3734	D	Which of the lettered components shown in the illustration indicates a thermostatic control switch?	H	I	J	K	RA-0005
11	3735	C	A valve installed in a hydraulic system to control the reversal of fluid flow is called a _____.	relief valve	reservoir valve	directional control valve	power valve	
11	3736	C	If you have a duplex double acting reciprocating pump making 160 strokes/minute, with a 4" diameter cylinder, a 11" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump?	83 gpm	229 gpm	167 gpm	42 gpm	

11	3737	B	If you have a duplex single acting reciprocating pump making 120 strokes/minute, with a 4" diameter cylinder, a 10" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump?	150 gpm	60 gpm	30 gpm	120 gpm	
11	3738	A	If you have a duplex double acting reciprocating pump making 190 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 88% volumetric efficiency, what is the capacity of this pump?	205 gpm	102 gpm	85 gpm	51 gpm	
11	3739	D	Which of the valves listed is not considered to be a hydraulic system directional control valve?	Two-position valve	Three-position valve	Detented-position valve	Counterbalance valve	
11	3740	D	If the operator releases the handle of the illustrated device while the system output is in motion, the valve will _____.	drift to an extreme position and the output speed will increase to maximum	drift to an extreme position and the output speed will drop to zero	return to its centered position and the output will increase to maximum	return to its centered position and the output speed will drop to zero	GS-0032
11	3741	D	The device shown in the illustration is typically called a/an _____.	three-position, directional control valve	variable-position, directional control valve	infinite-position, directional control valve	two-position, directional control valve	GS-0024
11	3742	B	If you have a duplex double acting reciprocating pump making 270 strokes/minute, with a 3" diameter cylinder, a 5" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump?	31 gpm	62 gpm	52 gpm	15 gpm	
11	3743	A	Regarding the device shown in the illustration, if the operator releases the handle while the system output is in motion, the _____.	valve will remain in position with the output remaining unchanged	valve will remain in position with the system output steadily decreasing	valve will drift to the center position stopping any further output of the system	valve will drift to the opposite position changing the direction of output motion of the system	GS-0035

11	3744	D	Which of the listed types of refrigeration compressors can be designed with short large diameter suction lines?	Reciprocating	Rotary	Screw	Centrifugal	
11	3745	A	The device shown in the illustrated is known as a/an _____.	three-position, detented, directional control valve	four-position, spring-centered, directional control valve	rotary, directional control valve	offset solenoid, directional control valve	GS-0035
11	3746	D	If you have a duplex single acting reciprocating pump making 100 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 82% volumetric efficiency, what is the capacity of this pump?	55 gpm	16 gpm	62 gpm	31 gpm	
11	3747	D	A hydraulic fluid flow control circuit, controlling linear actuator speed, with the pump operating below maximum operating pressure is known as the _____.	metered-in circuit	metered-out circuit	bleed-in circuit	bleed-off circuit	
11	3748	A	A hydraulic system flow-control circuit is shown in the illustration and is known as a _____.	metered-in circuit	metered-out circuit	bleed-off circuit	bleed-in circuit	GS-0105
11	3749	B	A hydraulic system flow-control circuit is shown in the illustration and is known as a _____.	metered-in circuit	metered-out circuit	bleed-in circuit	bleed-off circuit	GS-0106
11	3750	A	A hydraulic fluid flow control circuit, controlling linear actuator speed during extension, with the pump operating at system pressure, is known as a _____.	metered-in circuit	metered-out circuit	bleed-off circuit	bleed-in circuit	
11	3751	C	If you have a simplex single acting reciprocating pump making 250 strokes/minute, with a 4" diameter cylinder, a 6" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump?	114 gpm	57 gpm	38 gpm	86 gpm	

11	3752	A	If you have a simplex single acting reciprocating pump making 170 strokes/minute, with a 7" diameter cylinder, a 11" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump?	136 gpm	542 gpm	271 gpm	426 gpm	
11	3753	B	A hydraulic fluid flow control circuit, used to control linear actuator speed during retraction, with the pump operating at above maximum pressure, is known as a _____.	metered-in circuit	metered-out circuit	bleed-in circuit	bleed-off circuit	
11	3754	D	A dehydrator installed in a refrigeration system is used to remove _____.	noncondensable gases and vapors	oil from the refrigerant	refrigerant from the oil	moisture from the system	
11	3755	B	Which of the statements is true concerning the illustrated hydraulic circuit when the directional control valve is centered?	The oil pressure will equalize at both ends of the actuator and the pump will discharge through the reducing valve to the sump.	The load on the actuator may cause a difference in pressure to exist between the rod and cap end, and oil discharging to the sump across the relief valve with the pump operating.	A pressure differential will exist between the two ends of the actuator, with pump discharge lower than normal due to flow across the unloading valve.	Oil pressure to both sides of the actuator will be equal as the pump discharge flow is directed across the relief valve.	GS-0105
11	3756	A	If you have a duplex double acting reciprocating pump making 160 strokes/minute, with a 5" diameter cylinder, a 7" stroke and operating with 96% volumetric efficiency, what is the capacity of this pump?	183 gpm	91 gpm	128 gpm	46 gpm	
11	3757	D	Directional control valves used in hydraulic systems may be positioned _____.	manually	mechanically	electrically	all of the above	

11	3758	C	If you have a duplex single acting reciprocating pump making 180 strokes/minute, with a 6" diameter cylinder, a 10" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump?	312 gpm	94 gpm	187 gpm	375 gpm	
11	3759	C	Valve "D" indicated in the illustration is referred to as a/an _____.	relief valve	sequence valve	unloading valve	counter balance valve	GS-0049
11	3760	B	Which of the listed pressure-control valves would be used in a hydraulic system to temporarily divert some, or all of the pump discharge until the additional flow was required?	counterbalance valve	unloading valve	compound, pressure-relief valve	sequence valve	
11	3761	C	The determining factor for the strength of a flexible rubber hydraulic hose is the _____.	external cover	synthetic rubber inner tube	braided layer	teflon sleeve	
11	3762	D	If you have a duplex single acting reciprocating pump making 190 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 88% volumetric efficiency, what is the capacity of this pump?	85 gpm	51 gpm	205 gpm	102 gpm	
11	3763	A	Which of the following statements will be true if the position of the manual control lever, shown in the illustration, remains unchanged after the pump is placed on stroke.	Although oil will leak past part 'B,' the amount of pump stroke will be maintained until the control handle position is changed.	Regardless of the control handle position, the pump will gradually return to neutral stroke.	Regardless of the control handle position, the pump will gradually move to full stroke.	Although the control handle position was set, the pump displacement will fluctuate from zero to maximum flow rate until the handle is placed in its neutral position.	GS-0039
11	3764	D	Which of the listed materials can be used as a desiccant in a refrigeration system?	Silica gel	Activated alumina	Anhydrous calcium sulfate	All of the above	

11	3765	B	A bent axis, variable stroke, axial piston pump produces a greater capacity than a comparable tilting box-type axial piston pump, because the _____.	piston diameters are smaller	length of stroke is greater	RPM is doubled	discharge/return line diameter are arranged differently	
11	3766	B	If you have a duplex single acting reciprocating pump making 180 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 98% volumetric efficiency, what is the capacity of this pump?	90 gpm	108 gpm	54 gpm	216 gpm	
11	3767	D	Both the direction of flow and fluid flow rate of a variable displacement radial piston pump are determined by the relative positions of the _____.	pump shaft and central valve	pump shaft and horizontal ports	floating ring and pump shaft	floating ring and cylinder body	
11	3768	D	If you have a simplex single acting reciprocating pump making 170 strokes/minute, with a 5 diameter cylinder, a 4" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump?	101 gpm	56 gpm	42 gpm	27 gpm	
11	3769	B	A hydraulic cylinder is fitted with a cushioning device. The piston abruptly slows towards the end of its stroke, then continues to creep to the completion of its stroke. Which of the following represents the probable cause?	The cushion adjustment needle valve is open too far.	The cushion adjustment needle valve is not open sufficiantly.	The exhaust oil is flowing freely through the cushion nose.	The rod wiper is jammed in the cushion spear.	
11	3770	D	If you have a simplex single acting reciprocating pump making 190 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 80% volumetric efficiency, what is the capacity of this pump?	521 gpm	260 gpm	608 gpm	130 gpm	
11	3771	D	With an increase in temperature, the volume of hydraulic fluid _____.	contracts	remains the same	remains constant if pressure decreases	increases	

11	3772	A	When normal operating pressure is applied to the hydraulic oil in a high-pressure system, the oil _____.	viscosity will increase	viscosity will decrease	volume will increase	floc point will increase	
11	3773	B	Overheating of the hydraulic fluid in an electro-hydraulic anchor windlass, may indicate pump cavitation caused by _____.	overload of the pump motor	low oil level in the reservoir	low fluid viscosity existing only around the shaft seal	high oil level in the sump	
11	3774	B	Cold storage compartments used for frozen or chilled foods, may be equipped with medium velocity air coolers to establish rapid convection and to _____.	prevent shrinkage and drying of stored foods	deliver cooled air to all areas of the compartment	prevent air from being cooled below the dew point	eliminate all noxious odors in the compartment	
11	3775	A	Overheating of the oil in a hydraulic system can be caused by _____.	continuous leakage through the pressure relief valve	an increase in the number of the hydraulic fluid film layers	insufficient external pump slippage	fluctuating pump discharge pressure in response to normal load variations	
11	3776	C	If you have a duplex single acting reciprocating pump making 160 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 96% volumetric efficiency, what is the capacity of this pump?	50 gpm	38 gpm	75 gpm	150 gpm	
11	3777	C	Coast Guard Regulations require that OSV's under 100 GT must have a steering system that is capable of moving the ruddder _____.	by a required auxiliary steering system under emergency conditions when duplicated main steering power systems are provided	by design at one-half astern speed without damage.	from 35 degrees on one side to 30 degrees on the other side in no more than 28 seconds	from 15 degrees on one side to 15 degrees to the other side in 30 seconds at 7 knots or one-half the maximum service speed	
11	3778	A	If you have a duplex double acting reciprocating pump making 170 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump?	519 gpm	259 gpm	605 gpm	130 gpm	

11	3779	B	In order to properly regulate the high side pressure of a refrigerating system, using the device shown in the illustration, adjustment should be carried out by rotating the component labeled as _____.	I	M	N	O	RA-0015
11	3781	A	If you have a simplex single acting reciprocating pump making 130 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump?	22 gpm	89 gpm	45 gpm	78 gpm	
11	3782	D	In order to reduce the operating head pressure of a refrigerating system using the device shown in the illustration, you should use component _____.	"I" and rotate it counter clockwise (out)	"O" and rotate it clockwise (up)	"N" and rotate it counter clockwise (up)	"M" and rotate it counter clockwise (down)	RA-0015
11	3783	C	In order to raise the operating head pressure of a refrigerating system using the device shown in the illustration, component _____.	"O" should be rotated counter clockwise (down)	"N" should be rotated counter clockwise (down)	"M" should be rotated clockwise (up)	"I" should be rotated clockwise (up)	RA-0015
11	3784	C	To prevent motor overload during start-up of a hermetically sealed centrifugal refrigeration system, the compressor suction gas variable inlet guide vanes remain _____.	closed until the motor is connected across the line at full voltage and current drawn is up to full load current	opened until the motor is connected across the line at full voltage and current drawn is below full load current	closed until the motor is connected across the line at full voltage and current drawn is below full load current	opened until the motor is connected across the line at full voltage and current drawn is up to full load current	
11	3785	C	In a refrigeration system, if the cooling water to the condenser fails, the _____.	box temperature solenoid valve will close	expansion valve will close due to high superheat	compressor will shutdown on the high discharge pressure cutout switch	king valve will open	
11	3786	D	If you have a duplex single acting reciprocating pump making 190 strokes/minute, with a 4" diameter cylinder, a 8" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump?	124 gpm	31 gpm	129 gpm	62 gpm	

11	3787	A	The item, labeled "F" shown in the illustration, will begin to lift to a higher position if _____.	the total force above "H" is reduced	the working pressure in "N" is decreased	the spring force controlled by "I" is reduced	component "C" becomes fully seated	RA-0015
11	3788	B	If you have a duplex double acting reciprocating pump making 190 strokes/minute, with a 4" diameter cylinder, a 8" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump?	62 gpm	124 gpm	170 gpm	31 gpm	
11	3789	A	If a hydraulic pump is overheating, the cause may be _____.	excessive internal slippage in the pump	low discharge pressure and fluid flow	excessive fluid level in the hydraulic reservoir	operation of the pump at 100% efficiency	
11	3790	C	If you have a duplex single acting reciprocating pump making 190 strokes/minute, with a 5" diameter cylinder, a 12" stroke and operation with 75% volumetric efficiency, what is the capacity of this pump?	349 gpm	73 gpm	145 gpm	291 gpm	
11	3791	D	Capacity control of a centrifugal refrigeration compressor can be accomplished by _____.	varying the speed of the compressor	varying the suction pressure	varying condenser water flow rate	all of the above	
11	3792	A	During the operation of a multi-box refrigeration system using a capacity controlled compressor, only one box is actively being cooled. Under this operating condition, the compressor lube oil pressure should be _____.	the lowest normal pressure	in the midrange pressure	the highest normal pressure	of no consequence as the compressor lube oil pressure is not used in the operation of the capacity unloading system.	RA-0013
11	3793	B	If you have a simplex single acting reciprocating pump making 160 strokes/minute, with a 5" diameter cylinder, a 6" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump?	139 gpm	35 gpm	69 gpm	83 gpm	

11	3794	B	A solenoid valve is operated by magnetic action through _____.	suction pressure at the compressor	an electrically energized coil	superheat at the evaporator outlet coil	a vacuum operated bellows	
11	3795	D	A refrigeration compressor is used in a multi-box refrigeration system, having six of its eight cylinders controlled for variable load conditions. If all of the reefer boxes are recently activated, what percentage of the total number of compressor cylinders will be unloaded?	100%	50%	25%	0%	RA-0013
11	3796	A	If you have a duplex single acting reciprocating pump making 160 strokes/minute, with a 6" diameter cylinder, a 9" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump?	150 gpm	225 gpm	75 gpm	300 gpm	
11	3798	C	If you have a duplex single acting reciprocating pump making 190 strokes/minute, with a 3" diameter cylinder, a 12" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump?	251 gpm	31 gpm	63 gpm	126 gpm	
11	3799	A	If it is necessary to increase the operating head pressure of the refrigeration system using the device shown in the illustration, component _____.	"A" should be turned to compress the spring	"A" should be turned to relax the compression of the spring	"D" should be rotated to compress the enclosed bellows	"G" should be exchanged for a larger cross-sectional diameter	RA-0014
11	3800	B	The function of the device shown in the illustration is to control _____.	flow of refrigerant into the evaporator coils	high side pressure of a refrigeration system	flow rate of secondary refrigerant in a chilled water air conditioning system	the amount of low pressure gas entering the compressor suction	RA-0015
11	3801	A	The device shown in the illustration would normally be associated with what engine room system?	Bilge pump priming system.	Lube oil transfer system.	Fuel oil transfer system.	Hydraulic steering system.	GS-0075

11	3802	D	If you have a duplex double acting reciprocating pump making 190 strokes/minute, with a 3" diameter cylinder, a 11" stroke and operating with 77% volumetric efficiency, what is the capacity of this pump?	49 gpm	181 gpm	25 gpm	98 gpm	
11	3803	B	If "E" is moved closer to the top of "B" as shown in the illustration, the _____.	efficiency of the heat exchanger operation will be increased	point of condensation will be moved closer to the steam inlet of the heat exchanger	point of condensation will be moved closer to the condensate outlet of the heat exchanger	steam pressure set point will automatically be increased	GS-0002
11	3804	B	When multiple refrigerated boxes are maintaining individual temperatures and supplied by a single refrigeration compressor, the individual box temperatures are controlled by the _____.	suction valves	solenoid valves	expansion valves	compressor speed	
11	3805	D	A fluid power system is considered to be fail-safe if a component failure will result in _____. (46 CFR)	continuous operation of the system	a safety interlock producing a regulated shutdown of the system	the guaranteed safe and efficient operation of the system at all times	a slow and controlled release of the loading so as not to endanger personnel	
11	3806	C	If you have a duplex double acting reciprocating pump making 120 strokes/minute, with a 6" diameter cylinder, a 11" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump?	149 gpm	273 gpm	297 gpm	74 gpm	
11	3807	C	The devices labeled "C" in the illustration, are used as _____.	pressure regulating valves to insure excessive pressure does not damage the manifold nozzles	mud by-pass valves that protects a pump that fails when both pumps are on line	pressure relief valves to protect the pump in the event of a clog in the discharge line	a sealing water supply to the pump lantern gland	GS-0162

11	3808	C	If you have a duplex double acting reciprocating pump making 160 strokes/minute, with a 7" diameter cylinder, a 13" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump?	301 gpm	560 gpm	603 gpm	151 gpm	
11	3809	A	If you have a simplex single acting reciprocating pump making 110 strokes/minute, with a 5" diameter cylinder, a 10" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump?	42 gpm	84 gpm	126 gpm	168 gpm	
11	3810	B	If you have a duplex single acting reciprocating pump making 170 strokes/minute, with a 5" diameter cylinder, a 13" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump?	425 gpm	163 gpm	82 gpm	327 gpm	
11	3811	B	In order to properly regulate the high side pressure of a refrigerating system, using the device shown in the illustration, adjustment should be carried out by rotating the component labeled as _____.	I	M	N	O	RA-0015
11	3812	D	If you have a duplex single acting reciprocating pump making 180 strokes/minute, with a 4" diameter cylinder, a 12" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump?	314 gpm	52 gpm	209 gpm	105 gpm	
11	3813	A	If you have a duplex double acting reciprocating pump making 190 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 88% volumetric efficiency, what is the capacity of this pump?	164 gpm	82 gpm	55 gpm	41 gpm	

11	3814	A	Which of the following statements best describes the operation of the refrigeration valve shown in the illustration?	Turning the adjustment screw counterclockwise, as viewed from the bottom, results in an increase in evaporator superheat setting.	The sensor bulb detects changes in box temperature.	The temperature of the refrigerant passing through the device is colder at the inlet than at the outlet.	Refrigerant pressure acting through the external equalizer connection is always acting to close the valve.	RA-0007
11	3815	C	Which segment of the graph shown in the illustration represents the latent heat of fusion?	line 4	Line 3	Line 2	Line 1	SG-0001
11	3816	A	If you have a duplex single acting reciprocating pump making 250 strokes/minute, with a 3" diameter cylinder, a 5" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump?	34 gpm	57 gpm	17 gpm	68 gpm	
11	3817	D	The part labeled "C" of the illustrated bearing is called the _____.	thrust ring	outer race	inner race	cage	MO-0001
11	3818	D	The lowest temperature at which fuel oil gives off sufficient vapor to burn continuously when ignited is defined as the _____.	burning temperature	autoignition temperature	flash point	fire point	
11	3819	D	If you have a duplex double acting reciprocating pump making 120 strokes/minute, with a 4" diameter cylinder, a 12" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump?	72 gpm	216 gpm	36 gpm	144 gpm	

11	3820	A	The flash point of bunker fuel is defined as the _____.	lowest temperature at which the fuel oil will give off enough vapor to momentarily flash into flame when ignited	lowest temperature at which the fuel oil will give off enough vapor to continue to burn once ignited	temperature the fuel oil must be heated to for proper atomization	temperature at which the fuel oil will burn in a boiler furnace	
11	3822	A	If you have a simplex single acting reciprocating pump making 180 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump?	134 gpm	537 gpm	268 gpm	626 gpm	
11	3823	B	When a refrigeration compressor is in the 'off' cycle, the thermal expansion valve will _____.	always be wide open when the compressor restarts	continue to operate as if the system were in operation	remain open until evaporator pressure equalizes, then close until the compressor restarts	always be completely closed until the compressor restarts	
11	3824	D	When a refrigeration compressor is in the 'off' cycle, the thermal expansion valve _____.	is always wide open	is always completely closed	is open only until evaporator pressure is equalized	operates as if the system were in operation	
11	3825	D	Some 'hot gas' defrost systems reheat the refrigerant just prior to its returning to the compressor to _____.	increase the circulation of liquid refrigerant	prevent chill shocking the compressor suction valves	improve the efficiency of the expansion valve	reduce the damaging effects of liquid slugging	
11	3826	D	The lowest temperature at which fuel oil gives off sufficient vapor to momentarily flash into flame when ignited is defined as the _____.	burning temperature	ignition temperature	fire point	flash point	

11	3827	B	If you have a duplex double acting reciprocating pump making 270 strokes/minute with 4" diameter cylinder, and a 7" stroke with 81% volumetric efficiency, what is the capacity of this pump?	83 gpm	167 gpm	146 gpm	42 gpm	
11	3828	A	If you have a duplex double acting reciprocating pump making 170 strokes/minute, with a 7" diameter cylinder, a 11" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump?	542 gpm	271 gpm	426 gpm	136 gpm	
11	3829	B	If you have a duplex single acting reciprocating pump making 130 strokes/minute, with a 6" diameter cylinder, a 7" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump?	121 gpm	104 gpm	52 gpm	207 gpm	
11	3830	C	The tendency of a flamable liquid to vaporize is indicated by its _____.	fire point	pour point	flash point	boiling point	
11	3831	D	When using a chisel, you should _____.	wear gloves	hold the tool lightly	be certain it is a nonsparking type	wear safety glasses	
11	3832	D	The reading on the micrometer scale shown in figure "C" in the illustration is _____.	0.301 inch	0.310 inch	0.325 inch	0.335 inch	GS-0081
11	3833	A	If you have a duplex single acting reciprocating pump making 160 strokes/minute, with a 4" diameter cylinder, a 5" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump?	41 gpm	52 gpm	21 gpm	83 gpm	
11	3834	D	The pressure in a low pressure refrigeration system about to be opened for repair should be _____.	10 to 12 psig	4 to 7 psig	0 to 1 psig	25 inches of hg vacuum	

11	3835	B	When adding oil to a refrigeration system, precautions must be taken to ensure that _____.	the compressor suction pressure is not too high	all air is purged from the pump and charging fittings	the high pressure cutout switch is held open to prevent accidental starting	the condenser is completely shutdown first	
11	3836	B	If you have a duplex single acting reciprocating pump making 250 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 79% volumetric efficiency, what is the capacity of this pump?	132 gpm	75 gpm	38 gpm	150 gpm	
11	3837	C	The normal operation of a refrigeration compressor should be to cycle on _____.	in response to the low pressure cutout switch and off in response to the high pressure cutout switch	in response to the high pressure cutout switch and off in response to the low pressure cutout switch	and off in response to the low pressure cutout switch	and off in response to the high pressure cutout switch	
11	3838	B	If you have a simplex single acting reciprocating pump making 100 strokes/minute, with a 6" diameter cylinder, a 8" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump?	176 gpm	44 gpm	88 gpm	157 gpm	
11	3839	C	If you have a duplex single acting reciprocating pump making 170 strokes/minute, with a 5" diameter cylinder, a 9" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump?	204 gpm	57 gpm	113 gpm	226 gpm	
11	3840	A	The lathe tool shown as figure "T" in the illustration is commonly known as a/an _____.	right-cut roughing tool	left-cut side-facing tool	right-cut threading tool	left-cut roughing tool	GS-0090

11	3841	C	If a block and tackle arrangement were rigged as shown in figure "C" in the illustration, the amount of force "P" required to hold the 250 pound load stationary would be _____. (See illustration GS-0110)	83.33 lbs.	104.16 lbs.	125.00 lbs.	250.00 lbs.	GS-0110
11	3842	D	If you have a duplex double acting reciprocating pump making 180 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump?	268 gpm	626 gpm	134 gpm	537 gpm	
11	3843	D	If you have a duplex double acting reciprocating pump making 230 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 78% volumetric efficiency, what is the capacity of this pump?	68 gpm	120 gpm	34 gpm	137 gpm	
11	3844	C	Loss of refrigerant during the purging process can be kept to a minimum by _____.	operating the dehydrator continuously	purging through the discharge service valve	cracking the purge valve briefly	closing the liquid line king valve	
11	3845	B	If you have a duplex single acting reciprocating pump making 160 strokes/minute, with a 3" diameter cylinder, a 4" stroke and operating with 97% volumetric efficiency, what is the capacity of this pump?	25 gpm	19 gpm	9 gpm	38 gpm	
11	3846	C	If you have a simplex single acting reciprocating pump making 170 strokes/minute, with a 3" diameter cylinder, a 10" stroke and operating with 77% volumetric efficiency, what is the capacity of this pump?	80 gpm	40 gpm	20 gpm	134 gpm	
11	3847	B	The lathe tool shown as figure "Q" in the illustration is commonly known as a/an _____.	right-cut roughing tool	left-cut side-facing tool	right-cut side-facing tool	left-cut roughing tool	GS-0090

11	3848	D	The reading indicated on the micrometer scale in the illustration is .4815 inches. Which illustration represents this reading?	Figure A	Figure B	Figure C	Figure D	GS-0081
11	3849	D	If you have a simplex single acting reciprocating pump making 120 strokes/minute with 3" diameter cylinder, and a 4" stroke with 95% volumetric efficiency, what is the capacity of this pump?	14 gpm	28 gpm	19 gpm	7 gpm	
11	3850	D	The lathe tool shown as figure "S" in the illustration is commonly known as a/an _____.	right-cut roughing tool	left-cut threading tool	right-cut side-facing tool	left-cut roughing tool	GS-0090
11	3851	A	If you turn the handwheel clockwise of a spring-loaded, internal pilot, reducing valve, you will _____.	compress the adjusting spring against the diaphragm	release spring tension from the diaphragm	increase steam pressure to the reducing valve	decrease spring tension in the main valve	GS-0044
11	3852	B	What can happen to oil based mud when contaminated with salt water?	Nothing, as salt water is an ingredient of oil based mud.	Small amounts can cause thickening of the oil based fluid as well as a reduction in density.	Small amounts react with gel particles in the mud causing them to flocculate.	The water will collect at the bottom of the tank and can not be stripped overboard.	
11	3853	D	If you have a duplex double acting reciprocating pump making 180 strokes/minute, with a 5" diameter cylinder, a 13" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump?	149 gpm	388 gpm	75 gpm	298 gpm	
11	3854	C	To add refrigerant to the high side of an air conditioning system, you should introduce the refrigerant through the _____.	discharge service valve as a vapor	suction service valve as a liquid	charging valve as a liquid	condenser purge valve as a vapor	
11	3855	B	If a block and tackle arrangement were rigged as shown in figure "F" in the illustration, the amount of force "P" required to hold the 250 pound load stationary would be _____. (See illustration GS-0110)	43 lbs.	63 lbs.	83 lbs.	100 lbs.	GS-0110

11	3856	D	If you have a duplex double acting reciprocating pump making 250 strokes/minute, with a 3" diameter cylinder, a 5" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump?	34 gpm	57 gpm	17 gpm	68 gpm	
11	3857	C	If you have a duplex single acting reciprocating pump making 120 strokes/minute, with a 6" diameter cylinder, a 7" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump?	110 gpm	47 gpm	95 gpm	189 gpm	
11	3858	C	If you have a duplex single acting reciprocating pump making 170 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 97% volumetric efficiency, what is the capacity of this pump?	54 gpm	40 gpm	81 gpm	161 gpm	
11	3859	A	If you have a simplex single acting reciprocating pump making 140 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump?	113 gpm	451 gpm	226 gpm	526 gpm	
11	3860	B	The lathe tool shown as figure "Q" in the illustration is commonly used for _____.	cutting-off	left hand rough side facing	right hand rough turning	machining a smooth surface	GS-0090
11	3861	C	Frost appearing on the evaporator coils of a multi-box direct expansion refrigeration system _____.	is best removed by means of an ice pick	will increase the refrigeration effect	can be removed by passing hot vapors through the coils	can be quickly removed by simply shutting down the coils	
11	3862	A	If a refrigeration system were short of refrigerant, the condition would result in _____.	continuous running of the compressor	high suction pressure	high discharge pressure	short cycling of the compressor on the water failure switch	

11	3863	C	If you have a duplex double acting reciprocating pump making 170 strokes/minute, with a 5" diameter cylinder, a 12" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump?	147 gpm	354 gpm	295 gpm	74 gpm	
11	3864	A	If you have a duplex double acting reciprocating pump making 210 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 77% volumetric efficiency, what is the capacity of this pump?	123 gpm	62 gpm	108 gpm	31 gpm	
11	3866	D	If you have a duplex single acting reciprocating pump making 130 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump?	62 gpm	37 gpm	148 gpm	74 gpm	
11	3867	B	If you have a duplex double acting reciprocating pump making 160 strokes/minute, with a 6" diameter cylinder, a 13" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump?	113 gpm	453 gpm	227 gpm	491 gpm	
11	3868	D	Figure "I" shown in the illustration is a diagram of a valve handwheel, with S=5 inches and T=50 lbs. When an 18 inch cheater bar is used instead, and V=50 lbs., as shown in Figure "II", what value of additional torque is now being applied to the hand wheel valve stem?	115%	154%	250%	360%	GS-0109
11	3870	D	If a block and tackle arrangement were rigged as shown in figure "F" in the illustration, the amount of force "P" required to hold the 348 pound load stationary would be _____.	57 lbs.	66 lbs.	79 lbs.	87 lbs.	GS-0110

11	3871	A	If you have a duplex single acting reciprocating pump making 170 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump?	259 gpm	605 gpm	130 gpm	519 gpm	
11	3872	B	If you have a duplex double acting reciprocating pump making 100 strokes/minute, with a 6" diameter cylinder, a 10" stroke and operating with 80% volumetric efficiency, what is the capacity of this pump?	98 gpm	196 gpm	272 gpm	49 gpm	
11	3873	B	A "barrel" is defined as a unit of liquid, measured at 60°F, and is equivalent to _____.	31.5 U.S. gallons	42.0 U.S. gallons	55.0 U.S. gallons	60.0 U.S. gallons	
11	3874	B	On the refrigeration valve shown in the illustration, the part labeled "D" is the _____.	back disc	front disc	seal cap	normal discharge	RA-0008
11	3875	D	If your vessel burns 4 tons of fuel per hour at 21 knots, how many tons per hour will it burn at 16 knots?	3.0 tons	5.3 tons	2.3 tons	1.8 tons	
11	3876	B	If you have a duplex double acting reciprocating pump making 160 strokes/minute, with a 4" diameter cylinder, a 6" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump?	76 gpm	95 gpm	104 gpm	183 gpm	
11	3877	B	Which of the statements listed concerning heat transfer is correct?	Heat is always transferred at a constant rate.	Heat transfer rate increases as temperature difference increases.	The rate of heat transfer is not affected by temperature difference.	The high temperature region is known as a heat sink.	
11	3878	B	In a small appliance using HFC-134a you would expect to see the greatest temperature drop across the _____.	evaporator	capillary tube	compressor	receiver	

11	3879	A	If you have a duplex single acting reciprocating pump making 120 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump?	54 gpm	36 gpm	27 gpm	108 gpm	
11	3880	A	Temperature measurement is an indication of the _____.	level of heat intensity	total heat of a substance	rate of heat transfer from one substance to another	total heat contained in any closed energy system	
11	3881	D	If you have a duplex double acting reciprocating pump making 170 strokes/minute, with a 3" diameter cylinder, a 12" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump?	54 gpm	217 gpm	27 gpm	109 gpm	
11	3882	B	If you have a duplex single acting reciprocating pump making 190 strokes/minute, with a 3" diameter cylinder, a 11" stroke and operating with 77% volumetric efficiency, what is the capacity of this pump?	181 gpm	49 gpm	25 gpm	98 gpm	
11	3883	D	The reading indicated on a vernier micrometer caliper scale is .3128 inches. Which of the figures in the illustration represents this reading?	Figure B	Figure C	Figure E	Figure F	GS-0091
11	3884	A	When adding oil to a refrigeration system, you must be certain that _____.	all air is removed from the pump and fittings	the suction strainer is not blocked	the discharge pressure is not too high	the condenser is secured	
11	3885	A	Immediately before the actual charging process is started, refrigerant oil charging lines should be loosely connected and _____.	flushed with clean refrigerant oil	purged with refrigerant gas	washed with an ammonia and alcohol solution	grounded to the compressor	
11	3886	C	If you have a duplex double acting reciprocating pump making 160 strokes/minute, with a 5" diameter cylinder, a 7" stroke and operating with 96% volumetric efficiency, what is the capacity of this pump?	91 gpm	128 gpm	183 pm	46 gpm	

11	3887	A	After a refrigeration plant has been open for repairs, it is advisable to purge air from the system by _____.	slightly opening the purge valve on the condenser	cracking the valve bonnet assembly on the thermostatic expansion valve	turning over the compressor flywheel with the suction line valve open	loosening the purge connection attached to the receiver head	
11	3888	A	If you have a duplex double acting reciprocating pump making 330 strokes/minute, with a 3" diameter cylinder, a 4" stroke and operating with 96% volumetric efficiency, what is the capacity of this pump?	78 gpm	39 gpm	52 gpm	19 gpm	
11	3889	B	Which of the statements describes the "driving force" behind heat transfer by conduction?	The conductivity of the heat source.	The temperature difference between hot and cold regions.	The size of the heat sink for absorbing heat.	The amount of heat available in the heat source.	
11	3890	B	If you have a duplex single acting reciprocating pump making 130 strokes/minute, with a 5" diameter cylinder, a 8" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump?	132 gpm	82 gpm	41 gpm	164 gpm	
11	3891	D	Which practices should be followed at all times when using an electric grinding machine?	Wear goggles or face shield.	Be certain that the frame is properly grounded.	Be properly trained in the use of this tool.	Each of the above practices.	
11	3892	D	Safety glasses should be worn when _____.	using a hand portable grinder	scraping paint with a hand scraper	using a hammer and chisel	all of the above	
11	3893	A	When a refrigeration system is being charged through the low side, the _____.	refrigerant should be added as a vapor	suction service valve must be back seated	discharge service valve must be front seated	refrigerant drum should be turned upside down	

11	3894	C	Which of the following statements is correct concerning the testing of an R-12 refrigeration system for leaks in an enclosed compartment?	To gain sensitivity, the largest possible flame should be used with the halide torch.	The flame of a halide torch will turn blue in the presence of R-12.	Halide torches are useful in locating very small R-12 leaks.	Rapid leak testing is possible with the halide torch since there is no time lag between the time air enters the exploring tube until it hits the reactor plate.	
11	3895	C	Coast Guard Regulations (46 CFR) require that a small electrically heated hot water supply boiler, must be fitted with a/an _____.	temperature limiting regulating valve to be set at not more than 220° Fahrenheit	manual pressure regulator	temperature-pressure relief valve set at not more than 210° Fahrenheit	audible high water level alarm	
11	3896	D	If you have a duplex double acting reciprocating pump making 180 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 98% volumetric efficiency, what is the capacity of this pump?	108 gpm	90 gpm	54 pm	216 gpm	
11	3897	A	Coast Guard Regulations (46 CFR) for electric storage tank-type hot water heaters, required temperature limit controls to _____.	prevent the water in the upper 25% of the tank from attaining a temperature higher than 99°C (210°F)	are automatically reset when the temperature drops below 90°C (194°F)	open a secondary power supply to the heater elements only	prevent the water from attaining a temperature of more than 90° (194°F)	
11	3898	D	If you have a duplex double acting reciprocating pump making 160 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 96% volumetric efficiency, what is the capacity of this pump?	75 gpm	50 gpm	38 gpm	150 gpm	
11	3899	B	The instrument always used in conjunction with a salinometer is a _____.	pyrometer	thermometer	hygrometer	hydrometer	

11	3900	C	The flash point of a petroleum product is an indication of its _____.	viscosity	pour point	volatility	lower explosive limit	
11	3901	C	If you have a duplex single acting reciprocating pump making 120 strokes/minute, with a 5" diameter cylinder, a 9" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump?	35 gpm	42 gpm	84 gpm	169 gpm	
11	3902	B	The temperature, in degrees Fahrenheit, at which a liquid gives off a flammable vapor when heated in an open cup tester is called the _____.	fire point	flash point	flame point	ignition point	
11	3903	C	If you have a simplex single acting reciprocating pump making 190 strokes/minute, with a 4" diameter cylinder, a 13" stroke and operating with 77% volumetric efficiency, what is the capacity of this pump?	207 gpm	103 gpm	52 gpm	336 gpm	
11	3904	A	During the initial cooling down of a box temperature in a refrigeration system, which of the devices listed is used to prevent excessive gas pressure at the compressor suction?	Suction pressure hold back valve	High pressure cutout	Solenoid valve	Low pressure cutout	
11	3905	A	The flash point of a liquid refers to the temperature _____.	at which a liquid will give off inflammable vapors	at which a liquid will burn steadily	at which a liquid will explode	that a liquid must reach before it will flow readily	
11	3906	A	If you have a duplex double acting reciprocating pump making 190 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 88% volumetric efficiency, what is the capacity of this pump?	205 gpm	102 gpm	85 pm	51 gpm	

11	3907	C	The flash point of a liquid is the _____.	temperature at which it burns freely	temperature at which paraffin wax begins to crystallize out of the solution	lowest temperature at which it vaporizes enough to form an explosive air/vapor mixture	ability of a fuel to ignite upon injection into a diesel engine cylinder	
11	3908	D	The lowest temperature at which the vapors of a flammable liquid will ignite and cause self-sustained combustion in the presence of a spark or flame is the _____.	autoignition temperature	vaporization temperature	flash point	fire point	
11	3909	D	Oils are usually graded by their service classification and _____.	fire point	flash point	neutralization number	viscosity	
11	3910	B	During operating temperature changes, the ability of a lubricating oil to resist viscosity changes is indicated by a/an _____.	API number	viscosity index number	seconds Saybolt Furol number	seconds Saybolt Universal number	
11	3911	D	If you have a simplex single acting reciprocating pump making 180 strokes/minute, with a 4" diameter cylinder, a 12" stroke and operating with 80% volumetric efficiency, what is the capacity of this pump?	188 gpm	94 gpm	282 gpm	47 gpm	
11	3912	C	The general service pump is to be used to remove clean water from the No. 4 port aft cargo hold and discharged through the ballast overboard. What are the minimum number of valves that must be opened on both the suction and discharge to accomplish this task?	Four	Five	Six	Seven	GS-0042
11	3913	D	If you have a duplex double acting reciprocating pump making 120 strokes/minute, with a 4" diameter cylinder, a 13" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump?	25 gpm	39 gpm	78 gpm	156 gpm	

11	3914	B	Copper piping has been used in refrigeration systems because _____.	it is creep resistant at low temperatures	it offers greater heat transfer coefficient	iron is corroded by R-12	leaks are more easily detected in copper	
11	3915	D	Additives commonly found in turbine lubricating oil include _____.	antifoaming agents	oxidation inhibitors	extreme pressure additives	all of the above	
11	3916	B	If you have a duplex double acting reciprocating pump making 150 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump?	70 gpm	140 gpm	47 pm	35 gpm	
11	3917	D	What is the harmful effect of sulfur in a fuel?	It causes excessive smoking and soot at low firing rates.	It doesn't readily burn when combined with oxygen.	It clogs fuel oil strainers more often.	It forms a corrosive acid when mixed with water or water vapor.	
11	3918	D	A journal rotating in its bearing relies on hydrodynamic principles for lubrication. Under steady load conditions, the journal rotating in the bearing will assume a position _____.	at bearing bottom center	concentric in the bearing	at bearing top center	eccentric in the bearing	
11	3919	A	Which letter represents the gear tooth working depth of the gear set illustrated?	A	B	C	D	GS-0111
11	3920	A	Which of the following lube oil filters would be considered acceptable for use with today's high detergent additive type oils?	Cotton waste packed in perforated metal containers or cylindrical cartridges.	Cylindrical elements containing fullers earth combined with cellulose.	Foamed polyurethane of the impingement type supported on perforated metal rings.	Chemically treated paper and waste in cartridges.	
11	3921	D	Which of the filters listed will deplete the additives in lubricating oil?	Extended area membrane filter	Cloth bag extractor	Absorbent filter	Adsorbent filter	
11	3922	C	If you have a simplex single acting reciprocating pump making 270 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 81% volumetric efficiency, what is the capacity of this pump?	167 gpm	83 gpm	42 gpm	146 gpm	

11	3923	C	When securing a steam reciprocating pump, which of the valves listed should remain open?	Steam supply valve	Steam exhaust valve	Steam cylinder drain valve	Water cylinder drain valve	
11	3924	C	The device used to limit the passage of moisture through a refrigeration system is the _____.	humidifier	aerator	dehydrator	trap	
11	3925	A	If you have a duplex double acting reciprocating pump making 120 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump?	378 gpm	189 gpm	441 gpm	95 gpm	
11	3926	C	If you have a duplex double acting reciprocating pump making 170 strokes/minute, with a 8" diameter cylinder, a 8" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump?	263 gpm	363 gpm	527 gpm	132 gpm	
11	3927	A	An automatic temperature controller, with a net output pressure of 15 psi and a full scale range of 15°F, would have a sensitivity ratio of _____.	1.0 psi/°F	3.9 psi/°F	10.0 psi/°F	12.25 psi/°F	
11	3928	B	As a watchstander you should know that some auxiliaries are not designed to handle steam at boiler pressure. Which of the devices listed is usually fitted in the branch line to deliver steam at the correct pressure?	An orifice	A steam pressure reducing valve	A nozzle valve	A constant quantity regulating valve	
11	3929	C	A mechanical and/or hydraulic action preventing the over- correction of the fuel supply, while producing transient speed droop is called _____.	stability	hunting	compensation	sensitivity	
11	3930	C	A pyrometer is capable of producing a voltage by _____.	chemical reaction	light striking a photo sensitive substance	heating a junction of two dissimilar metals	squeezing crystals of certain substances	

11	3931	D	Before setting out on a three day voyage, Coast Guard Regulations require that the steering gear, whistle, and communications system between the bridge and engine room must be tested within how many hours prior to departure?	1 hour	4 hours	8 hours	12 hours	
11	3932	A	Coast Guard Regulations (46 CFR) require that any tankship making a voyage 'of over a 48 hour duration' must have certain tests conducted not more than 12 hours prior to leaving port. Meeting this requirement includes the testing of the _____.	means of communication between the bridge and engineroom	fire pump relief valve	watertight door to the shaft alley	emergency lighting system	
11	3933	B	Pillar cross-sections of "I", "H", or circular are used in ship construction in locations where there are large expanses, void of intermediate decks and bulkheads, such as in cargo holds and engine rooms. A supporting pillar which becomes bent out of vertical will _____.	not be critical until the vertical angle approaches 15°	loose practically all of its strength as a support	most likely experience shear stress failure if not reinforced immediately	not pose any problem, provided there are no cracked welds connecting it to any adjoining strength members	
11	3934	B	The back pressure regulating valve used in a refrigeration system serves to _____.	maintain a constant pressure in the suction line heat exchanger	limit the minimum pressure in the evaporator	limit the maximum pressure in the suction line heat exchanger	maintain a minimum discharge head on the compressor	
11	3936	D	If you have a duplex double acting reciprocating pump making 190 strokes/minute, with a 3" diameter cylinder, a 9" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump?	47 gpm	141 gpm	24 gpm	94 gpm	
11	3937	B	If you have a duplex double acting reciprocating pump making 120 strokes/minute, with a 8" diameter cylinder, a 13" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump?	312 gpm	625 gpm	507 gpm	156 gpm	

11	3938	C	The helicopter deck on an offshore drilling unit is required to be fitted with perimeter lights in alternating colors of _____.	red and white	yellow and white	yellow and blue	yellow and red	
11	3939	A	Each drilling unit equipped with helicopter fuel storage tanks must have the tanks installed as far as practicable from the _____.	landing area and sources of vapor ignition	main deck	engine room	drill floor	
11	3940	D	On all mobile offshore drilling units, the deckhead of each accommodation space must be located above _____.	the operating draft	the survival draft	the transit draft	the deepest load line	
11	3941	C	Coast Guard Regulations (46 CFR) require watertight doors in cargo vessels to be _____.	electrically controlled from a remote location	hydraulically powered only for closing	tested at each inspection for certification	tested within 12 hours after leaving port	
11	3942	C	The minimum firefighting equipment to be maintained onboard a tank vessel, can be determined from the _____.	U.S.C.G. Firefighting Manual for Tank Vessels	U.S.C.G. Equipment List	vessel's Certificate of Inspection	vessel's current articles	
11	3943	D	The vessel's firefighting equipment is listed on the _____.	Muster List ("Station Bill")	official ship's paper	hull certificate	Certificate of Inspection	
11	3944	B	A solenoid valve used in a refrigeration system should be installed _____.	with the axis of the solenoid horizontal, sensing temperature of the box, and upstream of the thermal expansion valve	upright, sensing temperature of the box, and upstream of the thermal expansion valve	upright, sensing temperature of the box, and downstream of the thermal expansion valve	upright, sensing superheat of the tail coil, and upstream of the thermal expansion valve	
11	3945	A	Where would you find a list of the firefighting equipment required on your vessel?	Certificate of Inspection	Muster List ("Station Bill")	Official logbook	In the captain's desk	
11	3946	A	If you have a duplex double acting reciprocating pump making 160 strokes/minute, with a 8" diameter cylinder, a 11" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump?	682 gpm	341 gpm	469 gpm	170 gpm	

11	3947	C	To determine the number of industrial personnel allowed on a mobile offshore drilling unit, you should check the _____.	Muster List ("Station Bill")	Safety of Life at Sea Certificate	Certificate of Inspection	operations manual	
11	3948	D	To determine the number of inflatable liferafts required on a mobile offshore drilling unit, you should check the _____.	load line certificate	operations manual	Stability letter	Certificate of Inspection	
11	3949	B	According to the regulations for mobile offshore drilling units, 'industrial personnel' are considered to be all persons carried on the MODU for the sole purpose of carrying out the industrial business of the unit, except for _____.	the operator's representative	the crew required by the Certificate of Inspection	the galley personnel	the designated person in charge	
11	3950	A	With regards to shipboard refrigeration systems, after November 14, 1994 it is illegal to _____.	intentionally vent class I or II refrigerants to the atmosphere	work on a refrigeration system without permission of the Officer in Charge Marine Inspection	mix R-12 and R-22	produce a class I refrigerant	
11	3951	C	If you have a duplex single acting reciprocating pump making 250 strokes/minute, with a 4" diameter cylinder, a 6" stroke and operating with 70% volumetric efficiency, what is the capacity of this pump?	86 gpm	29 gpm	57 gpm	114 gpm	
11	3952	D	Coast Guard Regulations require that vessels of 500 GT or less, what equipment must be tested weekly?	Storage batteries to provide all power for the vessel and operated under load for emergency lighting.	All vessel internal control system alarms.	Emergency astern operations, regardless of vessel location	Run emergency generator, driven by an internal combustion engine, under load for at least 2 hours.	
11	3954	C	When starting a reciprocating refrigeration compressor that has been shutdown for a period of time, you should manually throttle the _____.	sea water valve	king valve	suction valve	expansion valve	

11	3955	C	The type of gage most commonly used to measure pressure is the _____.	bimetallic type	diaphragm type	bourdon tube type	resistance-temperature type	
11	3956	B	If you have a duplex double acting reciprocating pump making 180 strokes/minute, with a 4" diameter cylinder, a 12" stroke and operating with 80% volumetric efficiency, what is the capacity of this pump?	94 gpm	188 gpm	282 gpm	47 gpm	
11	3957	C	Purging is the process used to _____.	eliminate moisture from the refrigeration system	separate refrigerant from oil	remove noncondensable gases from the refrigeration system	decrease the total amount of refrigerant in the system	
11	3958	D	Gate valves should not be used for throttling as _____.	the pressure drop will be excessive	air binding will develop	the installation of an equalizing line will be necessary	cutting of the disc will result	
11	3961	A	When new, a rotary pump is designed to have 0.002 inch (0.051 mm) clearance between the rotors and the pump casing in order to develop a 50 GPM (189.27 L/min) flow rate at 300 psi (2068 kPa). After one year of operation, the clearance has increased to 0.008 inch (0.203 mm), with the discharge pressure still indicated at 300 psi (2068 kPa). With the new indicated conditions, the pump capacity will be _____.	less than 50 GPM (189.27 L/min) because of increased clearance	50 GPM (189.27 L/min) because the pressure is unchanged	greater than 50 GPM (189.27 L/min) because of reduced slippage	greater than 50 GPM (189.27 L/min) because of increased efficiency	
11	3962	D	If you have a duplex single acting reciprocating pump making 170 strokes/minute, with a 5" diameter cylinder, a 4" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump?	40 gpm	25 gpm	101 gpm	50 gpm	
11	3963	C	A purge connection installed on the refrigerant side of a water cooled condenser is used to _____.	free tubes of accumulated scale	charge the system with refrigerant	remove noncondensable gases	ensure positive air circulation	

11	3964	D	If two compressors must be operated in parallel in order to maintain the box temperatures, a careful watch should be kept on the _____.	discharge pressure gauges of both compressors	suction pressure gauges of both compressors	expansion valves of both evaporator coils	oil levels in both compressor crankcases	
11	3965	D	A gear train is constructed with only two gears: a 2-inch (50.5 mm) diameter driving gear and a driven bull gear to rotate a propeller at 200 rpm. If the speed of the driving gear is 4,800 rpm, what is the diameter of the driven gear?	6 inches (152.4 mm)	12 inches (304.8 mm)	24 inches (609.6 mm)	48 inches (1219.2 mm)	
11	3966	C	If you have a duplex double acting reciprocating pump making 160 strokes/minute, with a 6" diameter cylinder, a 9" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump?	150 gpm	225 gpm	300 gpm	75 gpm	
11	3968	D	The valve shown in the illustration is designed to seal against positive pressure leaks around the valve stem by the use of _____.	a two piece rotating mechanical seal	rubber "O" rings	an external sealing line	adjustable packing gland	GS-0047
11	3970	C	In order to decrease the set point of the control valve as illustrated, used to regulate the output temperature of a hot water heater, the part labeled _____.	"K" must be rotated clockwise	"A" must be rotated counterclockwise	"A" must be rotated clockwise	"K" must be rotated counterclockwise	GS-0043
11	3971	C	In order to increase the set point of the control valve as illustrated, used to regulate the output temperature of a lube oil cooler, the part labeled _____.	"K" must be rotated clockwise	"A" must be rotated counterclockwise	"A" must be rotated clockwise	"K" must be rotated counterclockwise	GS-0043
11	3972	C	In order to increase the set point of the control valve as illustrated, used to regulate the output temperature of a refrigeration condenser, the part labeled _____.	"K" must be rotated clockwise	"A" must be rotated counterclockwise	"A" must be rotated clockwise	"K" must be rotated counterclockwise	GS-0043

11	3973	A	If you have a duplex single acting reciprocating pump making 130 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump?	45 gpm	78 gpm	22 gpm	89 gpm	
11	3974	C	When a refrigerated compartment of a multi-box system served by one compressor reaches the correct temperature, the temperature control in that one compartment is achieved by a/an _____.	expansion valve	back pressure regulating valve	solenoid valve	low pressure cutout switch	
11	3975	B	In order to decrease the set point of the control valve as illustrated, used to regulate the output temperature of a lube oil cooler, the part labeled _____.	"K" must be rotated clockwise	"A" must be rotated counterclockwise	"A" must be rotated clockwise	"K" must be rotated counterclockwise	GS-0043
11	3976	D	If you have a duplex double acting reciprocating pump making 160 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 96% volumetric efficiency, what is the capacity of this pump?	75 gpm	50 gpm	38 gpm	150 gpm	
11	3977	B	In order to decrease the set point of the control valve as illustrated, used to regulate the output temperature of a refrigeration condenser, the part labeled _____.	"K" must be rotated clockwise	"A" must be rotated counterclockwise	"A" must be rotated clockwise	"K" must be rotated counterclockwise	GS-0043
11	3978	C	Which of the following characteristics is true concerning the device shown in the illustration?	The unit does not require sealing liquid.	The correct rotation of the impeller is counter-clockwise as shown.	The unit completes two suction and discharge cycles in one revolution.	The unit is designed to pump liquids.	GS-0075
11	3980	D	If the evaporator coil horizontal return line of a container refrigeration system is less than 0.874" (2.21 cm) in diameter, the thermostatic expansion valve sensing bulb should be placed _____.	on the bottom of the line to enable the bulb to absorb the maximum amount of heat	as close as possible to the expansion valve	directly below the point of maximum heat transfer	on the upper surface of the line	

11	3981	A	A turbine exhaust pressure of 14.7 psia (101.3 kPa) is equal to _____.	00.000 psig (00.000 kPa)	00.147 psig (102.00 kPa)	01.470 psig (111.47 kPa)	29.400 psig (304.00 kPa)	
11	3982	B	In diagram "A", shown in the illustration, what is the displacement of the vessel when it is at a six foot (1.829 m) draft?	1000 tons (1016.47 t)	2000 tons (2032.94 t)	3000 tons (3049.41 t)	4000 tons (4065.88 t)	SF-0024
11	3984	C	The thermostatic expansion valve in a refrigeration system opens when the pressure _____.	decreases in the evaporator	decreases in the expansion valve control bulb	increases above the expansion valve diaphragm	increases in the solenoid valve	
11	3985	B	If you have a duplex single acting reciprocating pump making 180 strokes/minute with 5" diameter cylinder, and a 6" stroke with 87% volumetric efficiency, what is the capacity of this pump?	96 gpm	80 gpm	40 gpm	160 gpm	
11	3986	A	If you have a duplex double acting reciprocating pump making 170 strokes/minute, with a 3" diameter cylinder, a 10" stroke and operating with 77% volumetric efficiency, what is the capacity of this pump?	80 gpm	104 gpm	134 gpm	225 gpm	
11	3987	C	A reading of 0.250 on a micrometer with a 1 to 2 inch range is equal to _____.	1/4 inch	1/2 inch	1 1/4 inches	2 1/4 inches	
11	3989	B	The disc of a relief valve has an area of 0.75 square inches (483.87 square mm) when seated, and lifts at a set point pressure of 250 psi (1723.50 kPa). When the valve lifts, the area of the disc exposed to pressure increases by 10%. At what pressure does the valve reseat?	206 psi (1420.16 kPa)	227 psi (1564.94 kPa)	231 psi (1592.51 kPa)	250 psi (1723.50 kPa)	

11	3990	D	The controller set point of an automatic control system is 150°F (65.5°C). The valve closes when the output temperature reaches 160°F (71.1°C), and reopens when the temperature falls below 140°F (60°C). The type of positioning action in this controller is known as _____.	one-position single-point	two-position single-point	one-position differential-gap	two-position differential-gap	
11	3991	C	What is the potential energy of an object weighing 10 pounds (4.54 kg) at a height of 10 feet (3.05 m)?	10 ft-lb (1.38 kg-m)	20 ft-lb (2.76 kg-m)	100 ft-lb (13.83 kg-m)	1000 ft-lb (138.25 kg-m)	
11	3992	C	An 8-inch (203 mm), globe-type, stop-check valve has been installed in the lube-oil cooler water outlet, with the flow coming in from the top of the disk. This means that _____.	the valve will remain completely open	the valve will prevent back flow	the valve will never permit water flow from the lube oil cooler	the valve will allow the lube oil temperature to be 10°F (5.5°C) cooler than if the valve were properly installed	
11	3993	B	What is the weight of the empty barge shown in the illustration if it is currently drawing one foot of salt water? Its length is 40', width is 20', and its height is 10' .	10.3 long tons	22.9 long tons	102.9 long tons	205.7 long tons	GS-0157
11	3994	D	The pressure in a small appliance refrigeration system about to be opened for repair should be _____.	15 inches Hg	14.7 psig	1 to 2 psig	4 inches Hg vacuum	
11	3995	C	The barge shown in the illustration is 40' X 20' X 10' (12.192 m X 6.096 m X 3.048 m) and weighs 22.9 long tons (23.28 t) when empty. It has been loaded to a draft of 5 feet (1.524 m) in salt water. How many long tons of cargo have been added?	19.4 long tons (19.72 t)	49.1 long tons (49.91 t)	91.4 long tons (92.91 t)	94.1 long tons (95.65 t)	GS-0157

11	3996	B	If you have a duplex double acting reciprocating pump making 160 strokes/minute, with a 4" diameter cylinder, a 6" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump?	48 gpm	95 gpm	104 gpm	225 gpm	
11	3997	B	The barge shown in the illustration is 40' X 20' X 10' (12.192 m X 6.096 m X 3.048 m) and weighs 22.9 long tons when empty. It has been loaded to a draft of 8 feet in salt water. How many long tons of cargo have been added?	144.8 long tons	159.8 long tons	183.9 long tons	243.3 long tons	GS-0157
11	3998	A	What is the lowest permissible flashpoint of the oil used in a hydraulic valve actuating system that operates at 145 psi? (46 CFR)	200°F	212°F	300°F	315°F	
11	3999	C	If you have a duplex double acting reciprocating pump making 120 strokes/minute, with a 4" diameter cylinder, a 10" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump?	60 gpm	150 gpm	120 gpm	30 gpm	
11	4000	D	Regarding the device shown in the illustration, what would be the most probable cause if item "1" indicated an unusually high vacuum during the processing mode operation?	Nothing as this type of oily-water separator normally operates with a very high vacuum.	An unusually high vacuum indicates that the coalescer beds are installed upside down.	An unusually high vacuum indicates that the flow control valve "14" is throttled in too far.	An unusually high vacuum indicates the inlet piping valve may be closed.	GS-0153
11	4001	A	The ball float shown in the illustration is 7 inches in diameter, with an effective float arm of 31.5 inches and floats in a liquid with a specific gravity of 0.95. What is the operating torque of the system?	94.5 inch-pounds	100.8 inch-pounds	121.4 inch-pounds	220.5 inch-pounds	GS-0158

11	4002	A	When responding to a 'left rudder' command from the amidships position, which parts of the steering gear system illustrated will be subjected to the highest pressure?	"C" and "F"	"E" and "B"	"F" and "E"	"B" and "C"	GS-0137
11	4003	B	If you have a duplex single acting reciprocating pump making 160 strokes/minute, with a 4" diameter cylinder, a 6" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump?	25 gpm	48 gpm	76 gpm	101 gpm	
11	4004	C	The charging of a refrigerating system should be carried out by adding _____.	refrigerant vapor to the receiver only	liquid refrigerant to the low side only	liquid refrigerant to the high side only	liquid refrigerant to the high or low side	
11	4005	B	Why is a hydraulic linear actuator fitted with a cushioning device?	To regulate actuator speed through the entire stroke length.	To slow the action of the piston preventing shock and damage due to hammering effects.	To allow the pump to temporarily operate at a pressure 10% above the relief valve setting without lifting the relief valve.	All of the above.	
11	4008	D	Which of the listed types of soap grease offers the maximum chemical stability and resistance to separation at temperatures between 250°F (121.1°C) and 300°F (148.8°C)?	Lime soap grease	Calcium soap grease	Sodium soap grease	Lithium soap grease	
11	4009	A	When gas welding or burning, the acetylene working pressure must be kept below 15 psi (103.41 kPa) to prevent a possible _____.	explosion	torch backfire	torch flameout	acetone fire	
11	4010	A	In the illustrated system, what pressure will be indicated on the gauge if the load (x) is 8000 lbs (3632 kg) and the piston area is 10 sq. in (64.5 sq. cm)?	800 psi (56.31 kg/cm2)	8,000 psi (563.1 kg/cm2)	80,000 psi (5631.0 kg/cm2)	80 psi (5.63 kg/cm2)	GS-0062

11	4011	B	In the illustrated system, what pressure will be indicated on the gage if the load (x) is 8000 lbs (3632 kg) and the piston area (y) is 8 sq. in (51.6 sq. cm)?	640 psi (44.99 kg/cm2)	1,000 psi (70.3 kg.cm2)	64,000 psi (449.2 kg/cm2)	125 psi (8.79 kg/cm2)	GS-0062
11	4012	C	In the illustrated system, what pressure will be indicated on the gage if the load (x) is 10,000 lbs (4540 kg) and the piston area (y) is 8 sq. in (51.6 sq. cm)?	10,000 psi (703 kg/cm2)	80,000 psi (5,624 kg/cm2)	1,250 psi (87.88 kg/cm2)	156.25 psi (10.89 kg/cm2)	GS-0062
11	4013	D	If you have a duplex double acting reciprocating pump making 270 strokes/minute, with a 4" diameter cylinder, a 6" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump?	66 gpm	99 gpm	33 gpm	132 gpm	
11	4014	C	Leaking discharge reed valves in a refrigeration compressor should be _____.	reground	relapped	replaced	rewound	
11	4015	C	In the illustrated system, what pressure will be indicated on the gage if the load (x) is 702.68 lbs (319.02 kg) and the piston area (y) is 1.117 sq. in (7.21 sq. cm)?	785 psi (55.19 kg/cm2)	353 psi (24.82 kg/cm2)	629 psi (44.22 kg/cm2)	283 psi (19.89 kg/cm2)	GS-0062
11	4016	B	If you have a duplex single acting reciprocating pump making 170 strokes/minute, with a 5" diameter cylinder, a 12" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump?	74 gpm	147 gpm	173 gpm	354 gpm	
11	4017	A	If you have a duplex double acting reciprocating pump making 150 strokes/minute, with a 5" diameter cylinder, a 12" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump?	291 gpm	145 gpm	349 gpm	73 gpm	

11	4018	D	In the illustrated system, what pressure will be indicated on the gage if the load (x) is 10,000 lb (4,450 kg) and the piston area (y) is 10 sq. in (64.5 sq cm.)?	10,000 psi (703 kg/cm2)	100,000 psi (7,030 kg/cm2)	100 psi (7.03 kg/cm2)	1,000 psi (70.30 kg/cm2)	GS-0062
11	4019	B	In the illustrated system, what pressure will be indicated on the gage if the load (x) is 9984 lbs (4532.7 kg) and the piston area is 12 sq. in (77.4 sq. cm)?	291 psi (20.46 kg/cm2)	832 psi (58.49 kg/cm2)	628 psi (44.15 kg/cm2)	220 psi (15.47 kg/cm2)	GS-0062
11	4020	A	If a block and tackle arrangement were rigged as shown in figure "F" in the illustration, the amount of force "P" required to hold the 508 pound load stationary would be _____.	127 lbs.	145 lbs.	169 lbs.	203 lbs.	GS-0110
11	4021	A	In the illustrated system, what pressure will be indicated on the gage if the load (x) is 2,530 lbs (1,148.48 kg) and the area of the piston (y) is 38 sq. in (244.8 sq. cm)?	66.66 psi (4.69 kg/cm2)	8000 psi (562.4 kg/cm2)	55.55 psi (3.91 kg/cm2)	96000 psi (6,748.8 kg/cm2)	GS-0062
11	4022	A	If a block and tackle arrangement were rigged as shown in figure "F" in the illustration, the amount of force "P" required to hold the 376 pound load stationary would be _____.	94 lbs.	119 lbs.	125 lbs.	150 lbs.	GS-0110
11	4023	D	In the illustrated system, what pressure will be indicated on the gage if the load (x) is 632 lb (286.9 kg) and the piston area (y) is 1.5 sq. in (9.6 sq. cm)?	255 psi (17.93 kg/cm2)	565 psi (39.72 kg/cm2)	942 psi (66.22 kg/cm2)	424 psi (29.81 kg/cm2)	GS-0062
11	4024	B	What is the color of the flame produced by a halide torch when there is no refrigerant present?	Orange	Blue	Red	Green	
11	4027	A	If you have a duplex double acting reciprocating pump making 170 strokes/minute, with a 5" diameter cylinder, a 4" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump?	101 gpm	50 gpm	40 gpm	25 gpm	

11	4028	A	In the illustrated system, what pressure will be indicated on the gage if the load (x) is 758.7 lbs (344 kg) and the piston area (y) is 1.25 sq. in (8.0 sq. cm)?	611 psi (42.95 kg/cm2)	471 psi (33.11 kg/cm2)	942 psi (66.22 kg/cm2)	306 psi (921.51 kg/cm2)	GS-0062
11	4029	B	In the illustrated system, what pressure will be indicated on the gage if the load (x) is 500 lbs (227 kg) and the piston area (y) is .63 sq. in (4 sq.cm)	318 psi (22.63 kg/cm2)	796 psi (55.96 kg/cm2)	1,263.49 psi (88.8 kg/cm2)	785 psi (55.19 kg/cm2)	GS-0062
11	4030	D	If you find the pressure of a R-12 refrigeration system to be worked on is 0 psig (0 Kpa), _____.	only recover the vapor refrigerant	only recover the liquid refrigerant	recover liquid and vapor refrigerant and have it reclaimed	do not recover the refrigerant	
11	4032	B	Cracks may be prevented from developing at the corners of welded plating inserts by _____.	squaring the corners	rounding the corners	plug welding the corners	slot welding the corners	
11	4033	C	Deck beams on a MODU are generally spaced at equal intervals and run _____.	longitudinally	vertically	transversely	intermittently	
11	4034	A	In radiographic inspections, the standard test piece included in every radiograph provides an effective check on the overall quality and bears a numerical relation to the thickness of the part being tested. This piece is called a/an _____.	penetrometer	intensimeter	lead filter gauge	exposure screen	
11	4035	A	The safety feature which assists the hydraulic crane circuit illustrated to maintain the required boom angle is a function of item _____.	18	1	6	7	GS-0161
11	4037	D	The reading on the micrometer scale shown in the illustration is _____.	0.212	0.222	0.229	0.247	GS-0013

11	4038	B	According to Coast Guard Regulations (46 CFR), all pressure vessels other than unfired steam boilers shall be protected by pressure-relieving devices that prevent the pressure from rising more than _____ above the maximum allowable working pressure.	5 percent	10 percent	15 percent	20 percent	
11	4039	C	Which of the tolerances listed is allowed on the outside diameter of the bushing illustrated?	.050 inch	.003 inch	.0005 inch	1.2015 inches	GS-0017
11	4040	B	The movement of steam piping, as a result of changes in temperature, is best compensated for by the use of _____.	union joints	expansion joints	flexitallic gaskets	rigid brackets	
11	4041	B	If you have a duplex double acting reciprocating pump making 130 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump?	45 gpm	89 gpm	78 gpm	22 gpm	
11	4042	D	Aboard tankers, the term Category "A" Machinery Space, as defined by Coast Guard Regulations (46 CFR) means any space including trunks and ducts to that space containing _____.	internal combustion machinery used for main propulsion	one or more oil fired boilers or oil fuel units	internal combustion machinery used for purposes other than main propulsion where the total collective power is at least 500 brake horsepower	all of the above	
11	4043	D	In the illustration shown, which of the listed components would be removed or disconnected last during cleaning and inspection of the tank internals?	Valve, item "5"	Weir, item "7"	Coalescer bed, item "9"	coalescer bed, item "12"	GS-0153

11	4044	B	Which of the following conditions is true concerning a radiograph taken on a large welded piping repair?	A discontinuity in the form of a crack would appear as a thin light line against the dark background of the film.	Porosity, a discontinuity caused by entrapped gas, would occur as various sized round dark spots.	As long as the plane of a crack is not in direct alignment with the direction of radiation, detection is certain.	All of the above.	
11	4045	A	The steam coils in a high pressure evaporator used for saltwater service should be descaled with _____.	a wire brush	a needle gun	a chipping hammer	soap and water	
11	4046	B	If you have a simplex single acting reciprocating pump making 150 strokes/minute, with a 5" diameter cylinder, a 11" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump?	53.7 gpm	59.6 gpm	62.6 gpm	119.2 gpm	
11	4047	D	The ash content of a fuel oil is significant to the operating engineer because it _____.	indicates the quanity of energy released by burning a unit amount of fuel	is useful for determining proper atomization temperatures	reflects the overall thermal efficiency of the fuel oil service systems	is an indication of the amount of noncombustble material present in the oil	
11	4048	D	Dirt should not be allowed to contaminate a grease lubricant because the _____.	bearings will leak oil excessively	dirt will cause corrosion of bearing	grease will become inflammable	dirt is very abrasive when mixed with grease	
11	4049	D	The lubrication of a precision high speed bearing depends upon a system that produces _____.	high detergent oil with pressure additives	constant viscosity lubrication	a minimum of 15 psi to all parts of the system	adequate quanity at sufficient pressure	
11	4050	B	When the rotating shaft frequency and the natural vibrating frequency become synchronized at a particular speed, that speed is known as the _____.	brekaway speed	critical speed	synchronous speed	sympathetic speed	
11	4051	B	The function of the section labeled "C" in the device illustrated is to provide a/an _____.	passage for sealing liquid to enter the pump	passage for gas to be discharged	bearing surface for the rotor shaft	area for pump packing	GS-0075

11	4052	C	If you have a duplex double acting reciprocating pump making 160 strokes/minute, with a 5" diameter cylinder, a 6" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump?	69 gpm	83 gpm	139 gpm	35 gpm	
11	4053	C	Which of the following statements represents the last step to be followed when replacing the power element of the device shown in the illustration?	Shorten the capillary tubing.	Insulate the sensing bulb.	Adjust the TXV for proper evaporator tail coil superheat.	Reset the compresser cut-in setting.	RA-0007
11	4054	D	Tubing connections for refrigeration systems may be made by _____.	flaring	soldering	silver brazing	all of the above	
11	4055	B	The compressor in figure 4, if permitted to operate as illustrated will _____.	damage the bearings of the compressor	damage the bearings of the driving motor	cause the compressor to use more oil	result in a constant enlargement of the clearance expansion volume	GS-0159
11	4056	A	When the pinion axis is offset above or below the gear axis(there is no offset shown in the illustrated gear)the gears are identified as _____.	hypoid type	spiral bevel type	zerol type	straight-tooth bevel type	GS-0128
11	4058	B	If you have a simplex single acting reciprocating pump making 130 strokes/minute, with a 3" diameter cylinder, a 5" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump?	4.5 gpm	9.0 gpm	13.5 gpm	18 gpm	
11	4060	C	Coast Guard Regulations (46 CFR) permit the interval required for drawing certain tailshafts to be extended by the _____.	Vessel Operator's senior Port Engineer	Senior ABS surveyor	Commandat (G-MOC)	U.S. Maritime Administration	
11	4061	C	When metal is tempered, it becomes _____.	harder	less tough	less brittle	more brittle	
11	4062	C	When metal is tempered, it becomes _____.	harder	less flexible	less brittle	more brittle	

11	4063	D	If you have a duplex double acting reciprocating pump making 160 strokes/minute, with a 4" diameter cylinder, a 5" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump?	41 gpm	52 gpm	21 gpm	83 gpm	
11	4064	A	In addition to removing water from a refrigerant, most dehydrators also effectively remove entrapped _____.	acid	air	dichlorodifluoromethane	desiccant	
11	4065	D	Which of the following statements is true concerning the pump characteristics shown in the illustration?	The pump discharge head when operating at maximum efficiency is approximately 132 feet	Operating the pump at maximum efficiency would require approximately 58 horsepower	The pump capacity would be approximately 1480 GPM when operating at maximum efficiency	All of the above	GS-0138
11	4066	C	Which of the following statements is true concerning the pump characteristics shown in the illustration?	Maximum pump horsepower is developed between 1600 and 1800 GPM.	Maximum pump dynamic discharge pressure is approximately 160 PSI	Maximum efficiency occurs when the pump is operating between a 120 foot and 140 foot head.	All of the above	GS-0138
11	4068	C	Which of the following statements is true concerning the illustration?	The device is mainly used to indicate the superheat temperature of the refrigerant in the system.	Gage #7 is usually colored red.	Gage #7 would be classified as a compound gage.	Gage #6 is usually colored blue.	RA-0001
11	4069	A	Using the device shown in the illustration, which of the following statements is true when adding a charge to a refrigeration system.	Fitting #3 should be connected to the refrigerant cylinder	Fitting #4 should be connected to the system low side	Fitting #2 should be connected to the system high side	All of the above	RA-0001

11	4070	B	Which of the following statements is true concerning the illustration?	Valves 1 and 5 must both be opened to read system pressures on the respective gages.	Closing valve 1 isolates line #2 from line #3	Closing valve 1 isolates gage #7 from line 2.	Opening and backseating valve 1 isolates gage #7 from line 2.	RA-0001
11	4071	D	Which of the following is true concerning the system shown in the following illustration?	The system cannot control the relative humidity of the conditioned air	The reheaters are not used when in the cooling mode	The supply fan discharges directly into a chilling unit for the final stage of air temperature modulation	The dry bulb room temperature is controlled by a hot water reheater	RA-0009
11	4072	C	Which of the following is true concerning the system shown in the following illustration?	The system represents the freon circuit of a direct type air conditioning unit.	A room thermostat controls the wet bulb temperature of the space.	The air fan discharge temperature determines the amount of water flow circulating through the cooling coils.	Heat load will increase by increasing the amount of recirculated air.	RA-0009
11	4073	B	From the characteristics shown in the illustration, what would be the approximate shut-off head pressure of the centrifugal salt water pump?	58 psi	71 psi	130 psi	360 psi	GS-0138
11	4074	A	Which of the devices listed is used to limit frosting of evaporator coils on multiple box installations served by one compressor?	Back pressure control valve	Automatic expansion valve	Capillary tube	Solenoid valve	
11	4075	A	If you have a duplex double acting reciprocating pump making 160 strokes/minute with 3" diameter cylinder, and a 4" stroke with 97% volumetric efficiency, what is the capacity of this pump?	38 gpm	19 gpm	25 gpm	9 gpm	

11	4076	D	Which of the following characteristics is true concerning the device shown in the illustration?	The unit does not require sealing liquid.	The correct rotation of the impeller is counter-clockwise as shown.	The unit is designed to pump high viscosity oil.	The unit is designed to pump gases.	GS-0075
11	4077	B	According to Coast Guard Regulations (33 CFR), which of the listed types of Marine Sanitation Devices (MSD) produces an effluent having a coliform bacteria count not greater than 200 per 100 milliliter for overboard discharge on vessels built after January 30, 1975?	Type I	Type II	Type III	Type IV	
11	4078	B	If you have a duplex double acting reciprocating pump making 170 strokes/minute with 4" diameter cylinder, and a 11" stroke with 89% volumetric efficiency, what is the capacity of this pump?	91 gpm	181 gpm	249 gpm	45 gpm	
11	4079	C	A "thirty pound" steel plate would be _____.	3/8" thick	1/2" thick	3/4" thick	1" thick	
11	4080	B	A "twenty pound" steel plate would be _____.	3/8" thick	1/2" thick	3/4" thick	1" thick	
11	4081	D	According to Title 33 CFR, of the equipment listed below, which equipment must be tested NOT more than 12 hours prior to getting underway from a U.S. port when the voyage is to be of 48 hours or greater duration?	Steering gear	Emergency generator	All internal vessel control communications systems	All of the above	
11	4083	D	A trainee is on board your vessel and will need to be assessed in the demonstration of practical skills. Ideally you should assess their skill _____.	before they have received training	immediately after they have received training	after they have observed the skill demonstrated once	after they have received training and personally practiced the skill	
11	4084	C	When the temperature in a refrigerated space rises above its normal set point, which of the listed actions should occur FIRST?	The thermal expansion valve will close.	The compressor will start.	The solenoid valve will open.	The automatic defrost timer will activate.	

11	4086	B	If you have a duplex double acting reciprocating pump making 120 strokes/minute, with a 6" diameter cylinder, a 7" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump?	95 gpm	189 gpm	110 gpm	47 gpm	
11	4087	B	One important objective of a practical skill demonstration is to _____.	institute busy work for both the trainee and assessor	consistently and repeatively assess proficiency of critical tasks	subjectively prevent trainee's from being licensed or certified	determine overall competence of the trainee	
11	4088	B	In order to assess each trainee in the performance of a practical demonstration, the assessor should _____.	create a unique set of subjective questions for each trainee	refer to a checklist that represents the skill process as required on board the vessel	evaluate according to their discretion, simply by their ability to "tell" when a candidate is performing well	sign off the remaining half of all skills to be demonstrated based upon the success of the first half of the skill demonstration	
11	4089	A	When a ships officer signs off a trainee's successful completion of one or more practical demonstrations, they are attesting to the trainee's _____.	ability to perform the practical demonstration only at the time the skill was assessed	overall competency	ability to perform the specific task not only at the time of demonstration, but also for the future	knowledge of how to perform the task and nothing more	
11	4090	A	The assessment of a trainee's practical demonstration of skills should be conducted _____.	within the normal routine of vessel's operation	at any time of the day, particularly outside normal operations	only when the trainee first arrives on board, and preferably within the first few days	within the last six hours that the trainee will be on board the vessel	

11	4091	D	A licensed officer designated to certify a trainee's performance of a practical demonstration should sign off when _____.	another license officer has witnessed the performance of the demonstration	the majority of any portion of the skill has been demonstrated	the pre-brief with the trainee has been completed	the entire practical demonstration has been successfully completed and personally observed by the licensed officer	
11	4092	D	One function of the model checklists provided for the conduct of a practical demonstration is to promote _____.	repeatability in observing the assessment of the task to be demonstrated	a consistent standard in the assessment of the task to be demonstrated	a methodology by which elements of the missed practical demonstration can pointed out to the trainee	all of the above	
11	4093	B	When a training program provides a company and/or its vessels the model checklists by which a trainee will be deemed proficient, the ship's officers should _____.	use each specific checklist as it was presented and without deviation	modify the checklist to reflect the specifics of the equipment, systems, and operating parameters for the vessel upon which the demonstration is being conducted	totally disregard the model checklist and develop their own based on their own vessel standards	all of the above	
11	4094	C	Unless designed for such operation, two compressors should not be operated in parallel in a refrigeration system because the _____.	operation of two compressors will overload the expansion valve	condenser pressure will be too high causing condenser failure	lubricating oil may be transferred from one compressor to the other	evaporator would fail due to low suction pressure	
11	4095	B	If the discharge valves used in a refrigeration compressor are leaking badly, _____.	the reeds should be reground	the reeds should be replaced	the low side pressure will indicate below normal	the high pressure cut-out setting should be lowered	

11	4096	B	If a hole were to form in the division plate between stages of a flash type evaporator _____. I. 2nd stage vacuum would increase II. vaporization of the feed water would continue	I only	II only	Both I and II	Neither I nor II	
11	4097	C	If you have a duplex double acting reciprocating pump making 130 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump?	74 gpm	62 gpm	148 gpm	37 gpm	
11	4098	A	The result of a blow delivered by a heavy sea causing rapid vibrations of the elastic portions of the ships hull is identified as _____.	pounding	pitching	hogging	sagging	
11	4099	D	A refrigeration compressor used in a multi-box refrigeration system, is designed with six of its eight cylinders able to be controlled for variable load conditions. If all of the reefer boxes have just recently been activated, what percentage of the total number of compressor cylinders will be unloaded after start up?	100%	50%	25%	0%	
11	4101	B	The exploded view of the drawing shown in the illustration is intended to show the _____.	total number of parts in the assembled component	parts aligned for the correct order of reassembly	disassembled component in a one point perspective view	parts without using hidden lines	GS-0025
11	4102	C	While on watch, you notice that a significant amount of water is flowing out of the packing box from a centrifugal salt water pump which had been recently overhauled. You tighten the packing gland evenly by nearly a half inch, yet the amount of water output from the packing box does not diminish. You should _____.	make no further adjustments and continue to make a round of the engine room	take up evenly on the packing gland nuts another 2 or 3 full turns	back off on the nuts by the same amount to prevent scoring of the shaft sleeve and notify the next watch of the condition	shut off the sealing line valves to diminish the outflow of water from the packing box	

11	4103	B	In the hydraulic anchor windlass system illustrated, replenishment pump fluid flow is provided to the main system for automatic replenishment and to _____.	release the spring brake	provide actuating fluid flow to the horsepower torque limiter	shift valve "L" to line up the fluid motor relief valve	move stored oil across the indicated filter to maintain the oil in a water free condition	GS-0160
11	4104	C	A thermal expansion valve installed in a refrigeration system is controlled by _____.	the solenoid valve energizing coil	regulating the king valve	a thermal bulb on the evaporator coil	an electrically operated controller	
11	4105	D	The barge shown in the illustration is 40' X 20' X 10' and weighs 22.8 long tons when empty. What would be the maximum amount of cargo that may be loaded on the barge in salt water so that the maximum draft does not exceed 8 feet.	100 long tons	120 long tons	140 long tons	160 long tons	GS-0157
11	4106	D	While on watch, you notice that a significant amount of water is flowing out of the packing box from a centrifugal salt water pump which had been recently overhauled. You tighten the packing gland evenly by nearly a half inch, yet the amount of water output from the packing box does not diminish. You should _____.	make no further adjustments and continue to make a round of the engine room	take up evenly on the packing gland nuts another 2 or 3 full turns	shut off the seal line valves to diminish the outflow of water from the packing box	change over to the stand-by pump and inform the next watch	
11	4107	B	The ball float shown in the illustration is 9 inches in diameter, with an effective float arm of 27 inches and floats in a liquid with a specific gravity of 1.0. If the distance "L" equals 9 inches, what will be the force available at point "X"?	6.6 pounds	20.1 pounds	28.2 pounds	43.5 pounds	GS-0158
11	4108	C	At what temperature would the reading on the fahrenheit scale and the centigrade scale be identical?	16 degrees above zero	32 degrees below zero	40 degrees below zero	64 degrees below zero	

11	4109	A	Which of the following formulas shown below could be used to establish the temperature conversion from the fahrenheit scale to the centigrade scale?	T(c) = 5/9 (T(f) -32)	T(c) = 5/9 (T(f) +32)	T(c) = 9/5 (T(f) -32)	T(c) = 9/5 (T(f) +32)	
11	4110	D	The stud and nut pictured just below "B" is used to _____.	prevent the shaft sleeve from sliding	hold the impeller onto the shaft	maintain the two shaft sections together during rotation	hold the packing gland in place	GS-0129
11	4111	D	If you have a duplex double acting reciprocating pump making 150 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump?	44 gpm	73 gpm	87 gpm	140 gpm	
11	4112	A	test	test	test	test	test	
11	4113	C	A temperature reading of 72 degrees on the fahrenheit scale would correspond to what temperature on the centigrade scale?	18 degrees	20 degrees	22 degrees	24 degrees	
11	4115	B	If you have a duplex double acting reciprocating pump making 160 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 96% volumetric efficiency, what is the capacity of this pump?	132 gpm	526 gpm	263 gpm	614 gpm	
11	4116	B	Which of the following statements is true concerning the pump characteristics shown in the illustration?	Maximum efficiency is achieved when the pump is operating at a capacity of approximately 900 GPM	Operating the pump at a capacity of 1600 GPM would require approximately 60 horsepower	When operating at a 160 foot discharge head, the pump is running at maximum efficiency	All of the above	GS-0138
11	4117	B	Which of the filters listed will deplete the additives in lubricating oil?	Abundant filter	Adsorbent filter	Cloth bag extractor	Extended area membrane filter	

11	4118	D	If you have a duplex single acting reciprocating pump making 100 strokes/minute, with a 7" diameter cylinder, a 13" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump?	672 gpm	97 gpm	390 gpm	195 gpm	
11	4119	A	Which of the filters listed will deplete the additives in lubricating oil?	Adsorbent filter	Cloth bag extractor	Fine wire mesh	Extended area membrane filter	
11	4120	D	If your vessel burns 3 tons of fuel per hour at 19 knots, how many tons per hour will it burn at 15 knots?	5.3 tons	2.4 tons	1.9 tons	1.5 tons	
11	4121	C	Which of the filters listed will deplete the additives in lubricating oil?	Fine copper screen	Extended area membrane filter	Adsorbent filter	Cloth bag extractor	
11	4122	A	If you have a duplex double acting reciprocating pump making 120 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump?	108 gpm	54 gpm	36 gpm	27 gpm	
11	4123	C	Energy existing in a system as a result of the relative velocities of the objects is defined as _____.	potential energy	pressure energy	kinetic energy	relative energy	
11	4125	C	Mechanical energy in transition is referred to as _____.	enthalpy	heat	work	velocity	
11	4126	D	Using the device shown in the illustration, which of the following statements is true when adding a charge to a refrigeration system.	Fitting #3 should be connected to the refrigerant cylinder	Fitting #2 should be connected to the system low side	Fitting #4 should be connected to the system high side	All of the above	RA-0001
11	4127	D	Machinery with ball bearings designed to be filled with grease should have the relief plug temporarily removed while grease is being added. This plug should remain out until the machinery has been operated and sufficiently warmed up to ensure that _____.	the bearing does not shift position on the shaft	dirt and grit are flushed from the bearing housing	all air pockets are vented from the grease	all excess grease is expelled from the housing	

11	4128	C	Theoretically, if the "B" end of the hydraulic transmission illustrated were provided with a variable position tilting box, and the "A" end displacement were to be constant, the _____.	speed output of the "B" end would decrease in proportion as the tilting box would approach zero stroke	available horsepower at the "B" end would increase in proportion as the tilting box would approach zero stroke	available torque at the "B" end would increase in proportion to the increasing angle of the "B" end tilt box	speed output of the "B" would increase in proportion to increasing the "B" end tilting box angle	GS-0057
11	4129	D	What is the reading of the vernier micrometer caliper scale shown in figure "E" in the illustration?	0.2997 inch	0.3007 inch	0.3017 inch	0.3107 inch	GS-0091
11	4131	C	Which of the following terms is used to indicate that additional BTU's will result in a temperature change?	Critical point heat	Sublimation heat	Sensible heat	Latent heat	
11	4132	B	A decision has been made to change out the lube oil in a vessel's main propulsion unit ahead of the scheduled maintenance period. Which of the following statements is true concerning the reason for this decision?	The amount of detergent additives has decreased.	The viscosity of the oil has increased in addition to a decided rise in the neutralization number.	The alkalinity of the oil has decreased.	The neutralization number has decreased below minimum levels.	
11	4133	B	If you have a duplex double acting reciprocating pump making 130 strokes/minute, with a 5" diameter cylinder, a 8" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump?	82 gpm	164 gpm	132 gpm	41 gpm	
11	4134	D	A compound gage is used for measuring pressures both above and below _____.	absolute pressure	latent pressure	flow pressure	atmospheric pressure	
11	4136	D	The angle "A" shown on the illustrated lathe tool bit is properly called the _____.	working relief angle	side relief angle	side rake angle	nose angle	GS-0164
11	4137	A	The angle "D" shown on the illustrated lathe tool bit is properly called the _____.	working relief angle	side relief angle	side rake angle	nose angle	GS-0164
11	4138	C	The angle "B" shown on the illustrated lathe tool bit is properly called the _____.	working relief angle	side relief angle	side rake angle	nose angle	GS-0164

11	4139	B	The angle "C" shown on the illustrated lathe tool bit is properly called the _____.	working relief angle	side relief angle	side rake angle	nose angle	GS-0164
11	4140	D	The function of the hydraulic telemotor transmitter used in an electro-hydraulic steering gear system is to _____.	transmit the rudder angle to the bridge indicator	prevent the control linkage from striking the stops when hard over	automatically purge all entrained air from the system	send hydraulic signals to the receiving unit	
11	4144	D	When you find a small refrigerant leak with a halide torch, the color of the torch flame will be _____.	orange	blue	white	green	
11	4145	C	If you have a duplex double acting reciprocating pump making 120 strokes/minute, with a 5" diameter cylinder, a 9" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump?	84 gpm	152 gpm	169 gpm	42 gpm	
11	4151	A	If you have a duplex double acting reciprocating pump making 120 strokes/minute, with a 5" diameter cylinder, a 5" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump?	95 gpm	38 gpm	30 gpm	15 gpm	
11	4153	A	If you have a duplex single acting reciprocating pump making 180 strokes/minute, with a 4" diameter cylinder, a 9" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump?	78 gpm	176 gpm	39 gpm	157 gpm	
11	4154	B	The thermal bulbs for expansion valves used in air conditioning systems are charged with _____.	fluids other than the system charge	the same refrigerant as the system	a mixed charge of fluids	mercuric sulfate	
11	4155	D	If you have a duplex double acting reciprocating pump making 120 strokes/minute, with a 6" diameter cylinder, a 11" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump?	149 gpm	273 gpm	74 gpm	297 gpm	

11	4156	D	If R-134A is maintained at approximately 124 psig in a refrigeration system receiver, which of the listed values would approximately represent its saturation temperature?	0°F	20°F	50°F	100°F	RA-0023
11	4157	B	An orifice-check valve placed in a hydraulic system is used to _____.	regulate the fluid flow in either direction	restrict movement of hydraulic fluid in one direction, but allow free movement in the other direction	allow free movement of hydraulic fluid in both directions	allows only a restricted fluid flow in one direction	
11	4158	A	From the illustration shown, what would be the normal procedure to make adjustments to angle "E"?	Rock the tool holder on its base.	Remove the tool bit and regrind.	Extend or retract the tool bit in the tool holder.	Use the Tailstock Offset method.	GS-0164
11	4159	C	Structural members used to support and transmit the downward force of the load and distribute that force over a large area, are called _____.	stringers	gussets	stanchions	all of the above	
11	4160	D	When operating in automatic pitch control in a CPP system, the Electro-Hydraulic servo control valve assembly is actuated by what type of signal?	hydraulic	pneumatic	mechanical	electrical	GS-0170
11	4161	B	If you have a simplex single acting reciprocating pump making 160 strokes/minute, with a 4" diameter cylinder, a 5" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump?	83 gpm	21 gpm	41 gpm	52 gpm	
11	4162	A	The propeller blade pitch angle change is caused by axial movement of what component in the hub body assembly?	The crosshead.	The sliding block.	The crankpin ring.	The internal ring gear.	GS-0172

11	4163	B	Pitch translation in either the forward or aft direction in a CPP system continues until which of the following actions occurs?	Forward ports in the valve pin are blocked off.	Valve pin is centered in the valve liner.	Return oil ports in the valve pin align with the forward ports in the valve liner.	Return oil ports in the valve pin align with the aft ports in the valve liner.	GS-0172
11	4164	D	A purge recovery system is used in a centrifugal air conditioning or refrigeration system to _____.	purge lube oil from the liquid refrigerant	recover water purged from the system	separate foul gases from the receiver	purge noncondensable gases without losing refrigerant	
11	4165	B	If you have a duplex single acting reciprocating pump making 110 strokes/minute, with a 5" diameter cylinder, a 7" stroke and operating with 79% volumetric efficiency, what is the capacity of this pump?	72 gpm	52 gpm	26 gpm	103 gpm	
11	4166	A	If you have a duplex double acting reciprocating pump making 130 strokes/minute, with a 4" diameter cylinder, a 12" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump?	158 gpm	79 gpm	237 gpm	39 gpm	
11	4167	B	The hub purge valve serves to relieve pressure in the forward chamber of the servomotor cylinder in a CPP system when what situation occurs?	The propeller is stroked beyond its full ahead pitch limits.	The propeller is stroked beyond its full astern limits.	During periods thrust loading.	During periods of high-pressure oil surge.	GS-0172
11	4168	B	The function of the head tank on a CPP system is to _____.	provide extra oil for maintaining the normal sump level	prevent seawater from entering the hydraulic system when it is secured	provide static head pressure for maintaining proper control oil pressure	provide dynamic head pressure for maintaining proper high-pressure oil pressure	
11	4169	B	The direction in which the control oil servo valve opens and directs control oil to the oil distribution (OD) box piston in a CPP system is determined by the command _____.	signal timing input	signal polarity input	feedback timing.	feedback polarity	GS-0170

11	4170	C	If your ship is experiencing slow, erratic, or no pitch response to normal CPP system commands, you would suspect a fault in the _____.	hydraulic oil power module	servo motor	electrohydraulic servo	feedback potentiometer	GS-0170
11	4171	D	As shown in the illustration, if the "TOP VIEW" of an orthographic projection is indicated by figure "19", and the "FRONT VIEW" is indicated by figure "23", which figure would best represent the correct "RIGHT SIDE VIEW"?	Figure "17"	Figure "12"	Figure "3"	Figure "8"	GS-0165
11	4172	D	If you have a duplex double acting reciprocating pump making 230 strokes/minute with 4" diameter cylinder, and a 7" stroke with 78% volumetric efficiency, what is the capacity of this pump?	68 gpm	120 gpm	34 gpm	137 gpm	
11	4174	C	Double trunk pistons are used in some refrigeration compressors to reduce refrigerant boil off by _____.	increasing compressor volumetric efficiency	producing higher compression pressures	minimizing free contact between refrigerant and oil in the crankcase	eliminating the need for a shaft seal	
11	4175	C	As shown in the illustration, if the "TOP VIEW" of an orthographic projection is indicated by figure "1", and the "FRONT VIEW" is indicated by figure "9", which figure would best represent the correct "RIGHT SIDE VIEW"?	Figure "13"	Figure "6"	Figure "20"	Figure "5"	GS-0165
11	4176	B	As shown in the illustration, if figure "21" indicates the "TOP VIEW" of an orthographic projection, and figure "11" indicates the "FRONT VIEW", which figure would best represent the correct "RIGHT SIDE VIEW"?	Figure "2"	Figure "10"	Figure "8"	Figure "15"	GS-0165
11	4177	B	If you have a duplex double acting reciprocating pump making 160 strokes/minute, with a 5" diameter cylinder, a 6" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump?	69 gpm	139 gpm	83 gpm	35 gpm	

11	4178	A	As shown in the illustration, if the "TOP VIEW" of an orthographic projection is indicated by figure "12", and the "FRONT VIEW" is indicated by figure "3", which figure would best represent the correct "RIGHT SIDE VIEW"?	Figure "17"	Figure "23"	Figure "9"	Figure "8"	GS-0165
11	4179	B	Flux is used when soldering, in order to _____.	decrease the melting point of the solder	decrease the surface tension of the solder	ensure proper tinning	control the soldering iron temperature	
11	4181	D	In the circle illustrated, the circumference is 48.62 feet. What is the area of the shaded portion?	14.1 square feet	15.1 square feet	16.1 square feet	17.1 square feet	GS-0134
11	4182	C	An additive used to improve the ability of a lube oil to reduce friction in hypoid gear applications is known as a/an _____.	suppressant additive	dispersant additive	extreme pressure additive	viscosity improver additive	
11	4184	B	Which of the following statements is true concerning the use of dehydrators in refrigeration systems?	Dehydrators must be used continuously.	Dehydrators are usually installed in the liquid line.	Dehydrators are used when pumping down the system.	Dehydrators are used when purging the system.	
11	4185	D	The energy associated with atoms forming molecules is known as _____.	kinetic energy	potential energy	mechanical energy	chemical energy	
11	4186	C	Which lathe tool shown in the illustration would best be used on a workpiece to perform a left hand facing operation?	P	V	Q	R	GS-0090
11	4187	A	What is the reading of the vernier caliper scale shown in figure "A" in the illustration?	3.890 inch	3.915 inch	4.215 inch	4.890 inch	GS-0092
11	4188	C	If you have a simplex single acting reciprocating pump making 130 strokes/minute, with a 5" diameter cylinder, a 11" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump?	226 gpm	113 gpm	57 gpm	249 gpm	
11	4189	B	Bronze metal is an alloy composed mainly of _____.	copper and zinc	copper and tin	tin and lead	iron and copper	
11	4190	D	Monel metal is an alloy composed mainly of _____.	copper and tin	bronze and tin	zinc and copper	nickel and copper	

11	4191	C	Brass metal is an alloy composed mainly of _____.	tin and zinc	copper and tin	copper and zinc	silicon and lead	
11	4192	A	Stainless steel is an alloy composed mainly of _____.	chromium and steel	iron and steel	copper and steel	brass and steel	
11	4193	B	What would be the result of throttling the suction valve to the point where the flow was less than that recommended by a centrifugal pump? I. The designed total net head would be reduced. II. The pump would begin to cavitate.	I only	II only	Both I and II	Neither I nor II	
11	4194	D	A measurement of .2344 inches is equal to _____.	11/32 inches	15/32 inches	11/64 inches	15/64 inches	
11	4195	B	If you have a duplex single acting reciprocating pump making 150 strokes/minute, with a 7" diameter cylinder, a 9" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump?	275 gpm	214 gpm	107 gpm	427 gpm	
11	4196	A	The device shown in the illustration is known as a/an _____.	viscosimeter	flow meter	reid vapor pressure analyzer	pensky-martens cup	GS-0069
11	4197	D	The rupture disc on a low pressure centrifugal refigeration unit is used as an over pressure protection device for the _____.	economizer	condenser	compressor	chiller barrel	
11	4198	D	As shown in the illustration, if the "TOP VIEW" of an orthographic projection is indicated by figure "13", and the "FRONT VIEW" is indicated by figure "15", which figure would best represent the correct "RIGHT SIDE VIEW"?	Figure "11"	Figure "16"	Figure "2"	Figure "15"	GS-0165
11	4199	D	If you have a simplex single acting reciprocating pump making 130 strokes/minute with a 3" diameter cylinder, a 10" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump?	74 gpm	37 gpm	123 gpm	18 gpm	

11	4200	A	If you have a simplex single acting reciprocating pump making 150 strokes/minute, with a 4" diameter cylinder, a 6" stroke and operating with 81% volumetric efficiency, what is the capacity of this pump?	19.8 gpm	39.7 gpm	59.5 gpm	79.4 gpm	
11	4201	A	Regarding the hydraulic hose installation illustrated, the hose _____.	will expand under pressure to the left of center with flow from left to right	will expand under pressure to the right of center with flow from left to right	is properly installed	can pull away from the right hand pipe fitting with flow from left to right	GS-0064
11	4203	C	If you have a duplex single acting reciprocating pump making 150 strokes/minute, with a 7" diameter cylinder, a 13" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump?	154 gpm	165 gpm	309 gpm	325 gpm	
11	4204	A	When a refrigerated space reaches the desired temperature in a multi-box refrigeration system, which of the listed actions will occur FIRST?	The solenoid valve will close.	The expansion valve will open.	The low pressure cutout switch will stop the compressor.	The high pressure cutout switch will stop the compressor.	
11	4205	A	If you have a simplex single acting reciprocating pump making 180 strokes/minute, with a 4" diameter cylinder, a 5" stroke and operating with 96% volumetric efficiency, what is the capacity of this pump?	24 gpm	94 gpm	47 gpm	59 gpm	
11	4206	C	As shown in the illustration, if the "TOP VIEW" of an orthographic projection is indicated by figure "15", and the "FRONT VIEW" is indicated by figure "18", which figure would best represent the correct "RIGHT SIDE VIEW"?	Figure "5"	Figure "6"	Figure "10"	Figure "16"	GS-0165
11	4207	B	As shown in the illustration, if the "TOP VIEW" of an orthographic projection is indicated by figure "2", and the "FRONT VIEW" is indicated by figure "21", which figure would best represent the correct "RIGHT SIDE VIEW"?	Figure "3"	Figure "2"	Figure "17"	Figure "8"	GS-0165

11	4208	B	Which of the figures illustrated correctly identifies the position of the journal shortly after it has begun to rotate?	A	B	C	D	GS-0121
11	4209	C	The relative humidity is 50% and the dry bulb temperature is 90°F. Using the information shown in the illustration, determine the difference between the dew point and wet bulb temperature.	2°F	4°F	6°F	8°F	RA-0021
11	4210	B	The relative humidity is 30% and the dry bulb temperature is 90°F. Using the information shown in the illustration, determine the difference between the dew point and wet bulb temperature.	6.5°F	12.5°F	54.8°F	67.3°F	RA-0021
11	4211	D	If you have a duplex double acting reciprocating pump making 170 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump?	30 gpm	55 gpm	104 gpm	119 gpm	
11	4212	C	The major difference in the use of a P-type or S-type lavatory drain trap is the _____.	flow rate at which water must be removed	efficiency to seal and prevent sewer gas backflow	bulkhead or deck connection to the grey water drain system	percentage of solids entrained in the water to be drained	
11	4213	B	If you have a simplex single acting reciprocating pump making 180 strokes/minute, with a 3" diameter cylinder, a 4" stroke and operating with 97% volumetric efficiency, what is the capacity of this pump?	43 gpm	11 gpm	21 gpm	28 gpm	
11	4214	B	In a water-cooled refrigeration system, the condenser cooling water regulating valve is controlled by _____.	temperature of the cooling water	refrigerant pressure	amount of refrigerant in the system	temperature of the refrigerant after compression	

11	4215	B	If you have a duplex single acting reciprocating pump making 150 strokes/minute, with a 6" diameter cylinder, a 13" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump?	113 gpm	227 gpm	453 gpm	491 gpm	
11	4216	C	Which one of the following statements describes the throttling characteristics of a typical globe valve?	The first third of the valve disk travel in the open direction will result in approximately one-third of full flow rate.	The first third of valve disk travel in the open direction will produce a smaller increase in flow rate than the last third of valve disk travel.	The first third of valve disk travel in the open direction will produce a greater increase in flow rate than the last third of valve disk travel.	The first two-thirds of valve disk travel in the open direction will produce approximately the same increase in flow rate as the last third of valve disk travel.	
11	4217	D	When comparing globe valves to gate valves, globe valves:	are less effective at throttling flow.	are less effective as pressure regulating valves	produce a smaller pressure decrease when fully opened.	require less force to open against large differential pressures.	
11	4218	B	When comparing gate valves to globe valves, gate valves:	are more effective at throttling flow.	require more force to open against large differential pressures.	produce a larger pressure decrease when fully open.	are more effective as pressure regulating valves.	
11	4219	C	To "verify" the position of a fully opened manual valve in an operating system, the operator should operate the valve handwheel:	in the open direction until the valve is backseated one-half turn	to fully close the valve, then open the valve to the fully open position.	in the closed direction, then open the valve to its previously open position.	to open the valve until it touches the backseat, then close the valve to the desired position.	
11	4220	D	The reading indicated on a vernier micrometer caliper scale is .2470 inches. Which of the figures in the illustration represents this reading?	Figure A	Figure E	Figure F	Figure G	GS-0083

11	4221	B	Assuming oil and water flow rates remain the same, what would be the effect of scale formation occurring on the inside of the cooling water tubes of a lube oil heat exchanger?	Water temperature outlet temperature will decrease and the lube oil temperature will decrease.	Water temperature outlet temperature will decrease and the lube oil temperature will increase.	Water temperature outlet temperature will increase and the lube oil temperature will decrease.	Water temperature outlet temperature will increase and the lube oil temperature will increase.	
11	4222	C	Tube scaling in parallel flow heat exchangers causes the heat transfer rate to decrease because the _____.	surface area of the tube decreases	cooling fluid outlet temperature decreases	thermal conductivity of the scale is very low	flow through the heat exchanger becomes more turbulent	
11	4223	D	What is the reading of the vernier micrometer caliper scale shown in figure "F" in the illustration?	0.6153 inch	0.6203 inch	0.6253 inch	0.6383 inch	GS-0083
11	4224	C	When multiple refrigeration evaporators are served by the same compressor and operate at different temperatures, the pressure in the coldest evaporator is _____.	higher than the pressure in warmest evaporator	the same as any evaporator in the system	lower than the pressure in the warmest evaporator	controlled by adjusting the thermal expansion valve	
11	4225	C	If you have a simplex single acting reciprocating pump making 130 strokes/minute, with a 6" diameter cylinder, a 7" stroke and operating with 96% volumetric efficiency, what is the capacity of this pump?	207 gpm	104 gpm	53 gpm	21 gpm	
11	4226	B	Why must an operator pay particular attension to an auto/manual valve controller when it is placed in manual mode?	Manual valve control is not as stable as automatic valve control.	Valve position will no longer change in response to changes in system parameters.	The position of the valve can only be determined locally during manual control.	The valve can only be operated locally during manual control.	
11	4227	B	A stop-check valve is a type of check valve that _____.	cannot be shut remotely	can be used to prevent flow in both directions	can be opened manually to allow flow in both directions	contains both a gate valve disk and a check valve disk	

11	4228	B	Which one of the following is a difference between a typical relief valve and a typical safety valve?	The actuator closing spring on a relief valve is in a compressed state whereas the actuator closing spring on a safety valve acts in tension.	A relief valve gradually opens as pressure increases above setpoint pressure whereas a safety valve fully opens at the setpoint pressure.	Relief valves are capable of being gagged whereas safety valves are not.	The blowdown of a relief valve is greater than the blowdown of a safety valve.	
11	4229	D	A safety valve with a 2-inch diameter disk has a compressed spring applying 2,400 pounds of force to the top of the valve disk in opposition to system pressure. Which one of the following is the approximate system pressure at which the safety valve will open?	95 psig	191 psig	382 psig	764 psig	
11	4230	C	Rapid wear on the extreme outer corners to the cutting edges of a drill bit is the result of the drill having _____.	insufficient feed pressure	not enough cutting speed	too much clearance angle	not enough margin width	
11	4231	B	In the hydraulic anchor windlass system illustrated, replenishment pump fluid flow is provided to the main system for automatic replenishment and to _____.	release the spring brake	provide actuating fluid flow to the main pump tilt box control	shift valve "L" to line up the fluid motor relief valve	provide actuating fluid flow to the winch motor tilt box control	GS-0160
11	4232	C	The running unloader of the device shown in the illustration operates by _____.	temporarily discharging the compressed air to the atmosphere	holding open the high pressure stage reed-type suction valves	throttling a butterfly valve located in the compressor suction line	the use of an intercooler relief device	GS-0119
11	4233	C	If you have a duplex single acting reciprocating pump making 150 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump?	122 gpm	488 gpm	244 gpm	570 gpm	

11	4234	A	Which of the listed conditions would cause the thermal expansion valve to open?	Rise in the gas temperature within the cooling coils	Compressor cutting out	Compressor cutting in	A drop in the temperature of the cooling coils	
11	4235	B	One turn of the micrometer barrel will linearly move the spindle _____.	0.001 inch	0.025 inch	0.100 inch	0.250 inch	
11	4236	D	If you have a simplex single acting reciprocating pump making 130 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump?	148 gpm	74 gpm	62 gpm	37 gpm	
11	4237	C	If a specifically trained and qualified person is NOT on board a vessel to assess a new officer trainees practical demonstration or skills, the demonstration can be conducted, when provided with guidance, and signed off by _____.	any rating forming part of the watch	the vessel owner	any licensed officer at the management level	All of the above	
11	4238	B	Which component in a hydraulic system is commonly used to prevent the stray movements of a vertical load until required?	Pressure reducing valve	Counterbalance valve	Unloading valve	Sequence valve	
11	4239	C	In terms of liquid volume, approximately how many "Liters" equal one US "Gallon"?	1.75	2.75	3.75	4.75	
11	4240	B	In terms of linear measurement, approximately how many "inches" equal one "meter"?	29.4	39.4	49.4	59.4	
11	4241	A	In terms of weight conversion, approximately how many US "pounds" equal one "kilogram"?	2.2	3.2	4.2	5.2	
11	4242	D	In terms of metric pressure conversion, approximately what value of "psig" equals one "bar"?	1.5	4.5	10.5	14.5	
11	4244	D	Which of the following machinery remote control shutdowns is required to be tested during each regular inspection for certification?	Forced draft fan	Induced draft fan	Fuel oil transfer pump	All of the above	

11	4246	B	The function of the device illustrated is to _____.	assist in sychronizing generators	measure the speed of a rotating shaft	test for condensate conductivity	measure brine density	GS-0117
11	4247	A	If you have a simplex single acting reciprocating pump making 130 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump?	30 gpm	118 gpm	59 gpm	39 gpm	
11	4248	A	Modern trends show that full flow filters used in multi-operation hydraulic systems would most likely be located _____.	on the reservoir return line	on the relief valve discharge line	between the control valves and the actuators	on the reservoir fill line	
11	4249	D	Which of the following is true concerning the hose threads on compressed gas oxy-acetylene regulators and torches?	The oxygen regulator hose outlet thread connection is "left handed".	The acetylene regulator hose outlet thread connection is "right handed".	The torch oxygen inlet hose thread connection is "left handed".	The torch acetylene inlet hose thread connection is "left handed".	
11	4250	C	Which of the following is true concerning the hose threads on compressed gas oxy-acetylene regulators and torches?	The oxygen regulator hose outlet thread is "left handed".	The acetylene regulator hose outlet thread is "right handed".	The torch oxygen inlet hose thread is "right handed".	The torch acetylene inlet hose thread is "right handed".	
11	4251	D	Which of the following procedures would be correct when first lighting-off an oxy acetylene torch?	Open the oxygen valve wide open and the acetylene valve slightly to light-off.	Open the acetylene valve very slightly and the oxygen valve the same amount to light-off.	Open the oxygen valve very slightly to light-off and then open and adjust the acetylene valve.	Open the acetylene valve very slightly to light-off and then open and adjust the oxygen valve.	
11	4252	C	On a container box refrigeration system, when the current to a suction modulating valve is increased, the _____.	valve is moving to a more open position	temperature of the box is increasing	suction pressure of the compressor will decrease	amount of air flowing through the condenser is decreased	
11	4253	D	If a centrifugal boiler feed pump operating with a positive suction head vibrates, or becomes noisy, the cause could be _____.	excessive suction pressure	worn wearing rings	air leakage into suction line	insufficient flow	

11	4254	D	In addition to the main outermost scale on the low side compound gage fitted to the portable service manifold, there are often one or more other scales on the face of the gage. These are _____.	pressure scales for different refrigerants	pressure scales for varying ambient temperatures	temperature scales for varying ambient pressures	temperature scales for different refrigerants	
11	4255	C	A volume of one cubic foot would equal to how many gallons?	5.48 gallons	6.48 gallons	7.48 gallons	8.48 gallons	
11	4256	C	The device shown in the illustration is commonly referred to as a _____.	hydraulic steering gear pump	multistage ballast pump	rotary lobe type air compressor	control air dehydrator	GS-0119
11	4257	B	Cracks may be prevented from developing at the corners of welded plating inserts by _____.	squaring the corners	rounding the corners	plug welding the corners	slot welding the corners	
11	4258	B	If you have a simplex single acting reciprocating pump making 150 strokes/minute, with a 6" diameter cylinder, a 8" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump?	279 gpm	70 gpm	140 gpm	186 gpm	
11	4259	D	In accordance with Coast Guard Regulations (46 CFR), a steam propelled cargo vessel over 25 gross tons may have a Certificate of Inspection issued for _____.	one voyage only	a specific period of time to cover a described situation	a time period not exceeding 5 years	all of the above, depending upon the pertinent circumstances	
11	4260	C	The gas that exists in the stratosphere that helps to protect the environment from ultraviolet radiation is called _____.	radon	oxygen	ozone	nitrogen	
11	4261	D	What is the chemical in CFC refrigerant that destroys stratospheric ozone?	flourine	carbon	hydrogen	chlorine	
11	4262	C	Stratospheric ozone gas found in the atmosphere is a chemical compound composed of _____.	one oxygen atom	two oxygen atoms	three oxygen atoms	four oxygen atoms	
11	4263	B	What is the physical state of refrigerant as it enters the condenser of a typical refrigeration system.	subcooled liquid	superheated vapor	subcooled vapor	superheated liquid	

11	4264	C	At which of the following intervals must the cargo pump relief valves on tank vessels be tested?	Prior to each fuel discharge operation.	At least once each voyage.	At least once a year.	At each biennial inspection.	
11	4265	A	What is the physical state of refrigerant as it leaves a receiver in a typical refrigeration system ?	subcooled liquid	superheated liquid	subcooled vapor	superheated vapor	
11	4266	A	R-134A is normally the replacement for which older type of refrigerant?	R-12	R-22	R-11	R-123	
11	4267	D	The "Tare Weight" of a refrigerant storage cylinder refers to _____?	the weight of the cylinder with its current contents	the maximum weight of the refrigerant charge	the total weight of a fully charged cylinder	the weight of an empty cylinder	
11	4268	C	If a block and tackle arrangement were rigged as shown in figure "D" in the illustration, the amount of force "P" required to hold the 383 pound load stationary would be _____. (See illustration GS-0110)	57 lbs.	77 lbs.	128 lbs.	153 lbs.	GS-0110
11	4269	C	If you have a simplex single acting reciprocating pump making 130 strokes/minute, with a 4" diameter cylinder, a 9" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump?	118 gpm	59 gpm	30 gpm	133 gpm	
11	4270	B	Which of the following substances is normally classified as a low pressure refrigerant?	R-12	R-123	R-22	R-134A	
11	4271	D	What is the color coding for a storage container of R-134A refrigerant?	green	grey	purple	light blue	
11	4272	A	Which of the following refrigerants is Chlorine free and safe regarding atmospheric Ozone depletion?	R-134A	R-12	R-22	R-11	

11	4273	B	If there is a "large" release of refrigerant gas in a confined area, _____.	safety goggles and lined butyl gloves would be required before entering the space	a self contained breathing breathing apparatus (scba) would be required before entering the space	an explosive atmosphere would be created	dust or particle masks would be required before entering the space	
11	4274	A	Watertight doors on cargo vessels must be examined and tested by a Coast Guard inspector _____.	at each inspection for certification	at each cargo gear inspection	within 12 hours prior to any international voyage of 48 hours or more	at all fire and boat drills	
11	4275	D	A "hydroscopic" lubricant used in refrigeration compressors would have the characteristic of _____.	losing its lubrication qualities at higher temperatures	being highly toxic	decreasing in viscosity at low temperatures	having a high affinity for water which requires it to be kept in a sealed container.	
11	4276	D	What is the physical state of refrigerant leaving the condenser of a R-22 refrigeration system?	low pressure liquid	low pressure vapor	high pressure vapor	high pressure liquid	
11	4277	B	Why can CFC or HCFC refrigerants leaking into a confined space or into limited surroundings, cause suffocation ?	Refrigerants contain an acidic substance.	Refrigerants are heavier than air and displace oxygen.	Refrigerants lighter than air will rise.	Refrigerants obnoxious odor prevents breathing.	
11	4278	C	Why do low pressure refrigerant chillers usually require purge units ?	They normally operate below atmospheric pressure.	They draw in air through gaskets and seals.	Both A or B	Neither A nor B	
11	4279	D	The purge unit of a low pressure refrigeration chiller draws gas from the _____.	rupture disk	suction of the compressor	evaporator	top of the condenser	
11	4280	D	If you have a simplex single acting reciprocating pump making 130 strokes/minute, with a 5" diameter cylinder, a 11" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump?	226 gpm	113 gpm	249 gpm	57 gpm	

11	4281	B	What is the short term replacement for R-11 refrigerant, used in low pressure chillers?	R-22	R-123	R-500	R-134A	
11	4282	B	Why would one use refrigerant vapor rather than liquid, to initially charge a low pressure air conditioning chiller unit?	To prevent a safety shut down	To prevent the water coil from freezing	To keep pressure at a minimum	To protect the Thermal Expansion Valve	
11	4283	B	The recovery of refrigerant from refrigerant oil can be maximized by _____.	removing the oil	heating the oil	prolonged evacuation	all of the above	
11	4284	D	According to Coast Guard Regulations (46 CFR), a single steel hull cargo vessel operating exclusively in freshwater, shall be drydocked, or hauled out, at intervals not to exceed _____.	1 year	2 years	3 years	5 years	
11	4285	D	What condition may cause excessive superheat to occur at the evaporator outlet of an air conditioning system?	High head pressure	A dirty condenser	Insufficent air flow	Low refrigerant charge	
11	4286	A	If a block and tackle arrangement were rigged as shown in figure "F" in the illustration, the amount of force "P" required to hold the 324 pound load stationary would be _____. (See illustration GS-0110)	81 lbs.	108 lbs.	116 lbs.	130 lbs.	GS-0110
11	4287	B	Most of the liquid refrigerant to be removed from a system during a refrigerant recovery procedure, would be found in the _____.	condenser	receiver	hoses and lines	evaporator	
11	4288	D	What is the physical state of refrigerant entering the receiver of a refrigeration system?	superheated low pressure vapor	superheated high pressure vapor	subcooled low pressure liquid	subcooled high pressure liquid	
11	4289	A	Which best defines a "Type I" small refrigeration appliance according to the EPA regulations Section 608?	systems manufactured and hermetically sealed having a capacity of five pounds (2.27 kg) or less of refrigerant	refrigerators, freezers, room air conditioners and central air conditioners	any appliance charged with less than ten pounds (4.54 kg) of refrigerant	any appliance charged with less than two pounds (0.91 kg) of refrigerant	

11	4290	A	The physical state of refrigerant as found in the system reciever would be defined as a _____?	high pressure liquid	high pressure vapor	low pressure liquid	low pressure vapor	
11	4291	A	If you have a simplex single acting reciprocating pump making 140 strokes/minute, with a 3" diameter cylinder, a 12" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump?	24 gpm	97 gpm	48 gpm	193 gpm	
11	4292	B	Any noncondensable gases in a refrigeration system will eventually accumulate and cause a/an _____.	decrease low side pressure	increase in the high side pressure	decrease low side temperature	all the above	
11	4293	A	In the circle illustrated, the circumference is 50.24 feet. What is the area of the shaded portion?	18.3 square feet	19.3 square feet	20.3 square feet	21.3 square feet	GS-0134
11	4294	D	Which of the following intervals do Coast Guard Regulations (46 CFR) require the remote cutout for the fuel oil service pumps to be tested?	Prior to each sailing	Once each month	At each fire and boat drill	At each inspection for certification	
11	4295	C	Which of the following will speed up the recovery process when performing maintenance on a refrigeration system _____?	chilling the recovery vessel	heating the appliance	both A and B	neither A and B	
11	4296	A	The process of recovering refrigerant from an air conditioning or refrigeration system may be accelerated by _____.	recovering the liquid first and then the vapor	recovering vapor before the liquid	recovering the vapor and liquid at the same time	first heating the recovery cylinder	
11	4297	D	In a shipboard potable water system, which of the following symptoms would indicate that the hot water circulating pump had failed?	The hot water return manifold would be warmer than normal.	The average temperature of the hot water heater would be above normal.	The water faucets would operate at a lower pressure.	Below normal water temperature would be discharged for a long period before hot water would appear at the hot water faucets.	

11	4298	B	According to 46 CFRs, the master of a commercial vessel is required to submit a marine casualty report form CG 2692 to the nearest Coast Guard Marine Safety Office if _____.	damage to the vessel due to a collision is estimated between $15,000 and $20,000	the vessel was intentionally grounded because the bilge pumps were unable to maintain normal levels	a crewmember was placed on light duty for two days due to a sprained wrist and was required to wear a sling	all of the above	
11	4299	A	If your vessel burns 2.9 tons of fuel per hour operating at a speed of 20 knots, how many tons per hour will it burn at a speed of 15 knots?	1.2 tons	1.6 tons	2.0 tons	2.4 tons	
11	4300	D	According to 46 CFRs, when estimating the cost of collision damage to a tank vessel after a marine accident, which of the following should NOT be included in the repair cost estimate?	Cost to off-load the current cargo	Cost to gas-free the cargo tanks	Cost to drydock the vessel	All of the above	
11	4301	A	During the operation of a flash-type evaporator, the distillate flow meter indicates the output has significantly decreased from the previous day. Although all shell pressures appear normal, which of the following could be the probable cause for the decrease in output.	A leak has developed in the distillate collection tray.	Excessive L.P. extraction steam is flowing to the feedwater heater.	Feedwater temperature is being introduced at 168°F.	Distillate output temperature is being discharged at 100°F.	
11	4302	B	If you have a simplex single acting reciprocating pump making 130 strokes/minute, with a 5" diameter cylinder, a 13" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump?	267 gpm	67 gpm	134 gpm	347 gpm	
11	4303	D	If you have a duplex double acting reciprocating pump making 140 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump?	32 gpm	43 gpm	64 gpm	129 gpm	
11	4304	B	Which of valves listed is shown in the illustration?	An R-12 hand expansion valve	An R-12 back pressure regulating valve	A bellows operated expansion valve	A bellows operated king valve	RA-0006

11	4305	B	If you have a duplex double acting reciprocating pump making 150 strokes/minute, with a 6" diameter cylinder, a 8" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump?	70 gpm	279 gpm	140 gpm	186 gpm	
11	4306	C	In a flash type evaporator, all saltwater headers are vented through individual vent cocks to the _____.	saltwater heater shell	second-stage condenser	atmosphere	first stage condenser	
11	4307	B	You are unable to pump out the aft starboard engine room bilge. If there is one foot of water over the top of the bilge well, what action should be carried out?	Send the wiper into the well with only a scoop and pail.	Remove the bilge manifold valve and attempt to back flush the line.	Simultaneously operate all available bilge pumps.	It is only necessary to transfer half the contents of a drum of degreaser into the bilge well.	
11	4308	D	The rate of heat transfer between the hot and cold fluids passing through a shell-and-tube type heat exchanger will _____.	remain constant along the tube's length	vary according to the fluid pressures	remain constant throughout the heat exchanger	vary from section to section throughout the heat exchanger	
11	4309	B	If you have a duplex double acting reciprocating pump making 150 strokes/minute, with a 7" diameter cylinder, a 12" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump?	142 gpm	570 gpm	285 gpm	488 gpm	
11	4310	D	The presence of scale and dirt on the saltwater side of a lube oil cooler is usually indicated by _____.	clogged lube oil strainers	seawater leaking into the lube oil system	increasing lube oil pressure	gradually increasing lube oil temperature	
11	4311	D	If you have a duplex double acting reciprocating pump making 170 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 97% volumetric efficiency, what is the capacity of this pump?	81 gpm	101 gpm	162 gpm	202 gpm	

11	4312	C	Which of the following is the probable cause for a motor driven, low pressure, reciprocating air compressor to repeatedly trip the circuit breaker upon starting?	Defective pressure switch	Leaking suction valve	Failure of the unloader system	Compressor starting without load	
11	4313	C	If you have a simplex single acting reciprocating pump making 130 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump?	414 gpm	207 gpm	104 gpm	483 gpm	
11	4314	B	In refrigeration systems with multiple evaporators, the metering of refrigerant to each refrigerated space is accomplished by _____.	the king expansion valve	individual coil expansion valves	a solenoid valve in the liquid line	individual back pressure regulating valves on all but the coldest box	
11	4315	A	If you have a duplex double acting reciprocating pump making 190 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump?	109 gpm	95 gpm	54 gpm	27 gpm	
11	4316	B	The root opening dimension shown in the illustration is used to indicate the _____.	penetration depth of the desired weld	allowable space across the bottom of the "V" groove	width across the bottom of the weldment	maximum thickness of the completed weld	GS-0076
11	4317	B	The high pressure cut-out switch used on centrifugal low pressure refrigeration units using R-123 would be set to shut off the compressor at approximately _____.	1 psig	10 psig	50 psig	100 psig	
11	4318	B	When welding or burning with an oxyacetylene outfit, _____.	open the acetylene cylinder valve slowly until the hose pressure reaches a minimum of 30 PSIG	the acetylene cylinder valve should only be opened 1/4 to 1/2 turn and leave the wrench on the valve stem	never allow more than 10 PSIG pressure in the oxygen hose	it is important to remember that the oxygen hose threads are left handed	

11	4319	B	If you have a duplex double acting reciprocating pump making 140 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump?	23 gpm	91 gpm	45 gpm	79 gpm	
11	4320	D	If a bilge pump is able to develop some vacuum, but is unable to sufficiently pump out the bilges, you would check for _____.	a clogged suction strainer	leaks in the suction piping	a relief valve not properly seated	all of the above	
11	4321	C	If you have a duplex double acting reciprocating pump making 160 strokes/minute, with a 4" diameter cylinder, a 10" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump?	33 gpm	131 gpm	65 gpm	163 gpm	
11	4322	C	The difference between the setpoint and the measured parameter in an automatic flow controller is called:	gain	bias	error	feedback	
11	4323	C	The range of values around a setpoint of a measured variable where "no action" occurs in an automatic flow controller is called:	deviation	error	deadband	bias	
11	4324	A	In addition to pressure, most refrigerant compound gages are also provided with a scale indicating _____.	saturated gas temperature	superheated gas temperature	absolute temperature	absolute pressure	
11	4325	D	If you have a simplex single acting reciprocating pump making 130 strokes/minute, with a 5" diameter cylinder, a 13" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump?	267 gpm	134 gpm	347 gpm	67 gpm	
11	4326	B	In an automatic flow controller, the factor by which the magnitude of the flow error signal has been increased to drive the final valve controller is referred to as:	bias	gain	feedback	offset	

11	4327	A	In a proportional controller, the term "offset" refers to the difference between the:	control point and setpoint	control point and proportional band	deadband and setpoint	deadband and proportional band	
11	4328	C	The return signal from a valve as sensed by an automatic flow controller that is proportional to the actual valve position is referred to as:	gain	bias	feedback	error	
11	4329	A	The difference between the set point in an automatic controller and the steady-state value of the measured parameter is called:	offset	gain	deadband	feedback	
11	4330	D	Which of the following changes in pump operating parameters will lead to pump cavitation in a centrifugal pump that is operating in an open system?	Steadily decreasing pump speed	Steadily increasing pump suction pressure	Steadily increasing pump discharge pressure	Steadily increasing pump inlet temperature	
11	4331	A	If you have a duplex double acting reciprocating pump making 110 strokes/minute, with a 3" diameter cylinder, a 5" stroke and operating with 97% volumetric efficiency, what is the capacity of this pump?	33gpm	27 gpm	16 gpm	8 gpm	
11	4332	A	As shown in the illustration, if electric current energizes the solenoid valve #24, which of the following will occur?	The evaporator defrost cycle will initiate.	The spool piece of modulating valve #5 will shift to the left.	The compressor will deenergize on low pressure cut off.	System will pump down to the receiver.	RA-0018
11	4333	B	If you have a duplex double acting reciprocating pump making 160 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 96% volumetric efficiency, what is the capacity of this pump?	47 gpm	188 gpm	94 gpm	78 gpm	
11	4334	C	Which of the following statements is correct concerning a halide torch leak detector?	The probe should be moved rapidly over the area of a suspected leak.	The torch is effective in locating large leaks only.	The flame will turn green in the presence of R-12.	A refrigerant gas mask must be worn while using the torch.	

11	4335	A	If a reciprocating air compressor has a knock occurring in frequency with its operating RPM, the cause is probably _____.	worn main bearings	insufficient cylinder lubrication	defective drive belts	all of the above	
11	4336	A	If you have a simplex single acting reciprocating pump making 130 strokes/minute, with a 4" diameter cylinder, a 12" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump?	39 gpm	154 gpm	79 gpm	237 gpm	
11	4338	C	In a direct expansion condensing unit type refrigeration system, an externally equalized thermal expansion valve will respond to _____. I. A change in temperature of the evaporator coil II. pressure surges at the compressor suction	I only	II only	Both I and II	Neither I nor II	
11	4340	C	An engine spare parts storeroom is at a temperature of 70 degrees Fahrenheit and contains a storage bottle of refrigerant R-134A. What would be the approximate gage pressure inside this bottle?	5 psig	35 psig	70 psig	170 psig	
11	4344	D	In the refrigeration system illustrated, the liquid line strainer is used to keep dirt and scale out of the _____.	compressor	receiver	back pressure valve	solenoid valve	RA-0010
11	4347	B	If you have a duplex single acting reciprocating pump making 130 strokes/minute, with a 5" diameter cylinder, a 11" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump?	249 gpm	113 gpm	57 gpm	226 gpm	
11	4349	D	If you have a duplex double acting reciprocating pump making 120 strokes/minute, with a 5" diameter cylinder, a 6" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump?	27 gpm	54 gpm	65 gpm	109 gpm	
11	4350	D	The reading on the micrometer scale shown in figure "C" in the illustration is _____.	0.200 inch	0.201 inch	0.220 inch	0.224 inch	GS-0093

11	4353	D	If you have a duplex double acting reciprocating pump making 140 strokes/minute, with a 5" diameter cylinder, a 7" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump?	43 gpm	78 gpm	110 gpm	157 gpm	
11	4354	D	Which of the locations listed would be considered as the most common place to install a dryer in a refrigeration system?	Between the compressor and the condenser.	Between the thermal expansion valve and the evaporator.	In the suction line.	In the liquid line.	
11	4358	C	If you have a duplex, single acting, reciprocating pump making 140 strokes/minute with a 3" diameter cylinder, and a 12" stroke with a 94% volumetric efficiency, what is the capacity of this pump?	193 gpm	24 gpm	48 gpm	97 gpm	
11	4364	A	The primary function of a back pressure regulator installed in a refrigeration system is to _____.	limit the minimum evaporator pressure to ensure excessively low box temperatures are not reached	maintain a constant compressor suction pressure regardless of load	maintain an evaporator coil pressure that assures excessively cold coil temperatures	adjust compressor suction pressure to load demands	
11	4368	D	If your vessel burns 8 tons of fuel per hour at 15 knots, how many tons per hour will it burn at 22 knots?	11.7 tons	17.2 tons	14.2 tons	25.2 tons	
11	4369	D	If you have a duplex single acting reciprocating pump making 130 strokes/minute, with a 5" diameter cylinder, a 13" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump?	347 gpm	67 gpm	267 gpm	134 gpm	

11	4371	A	If you have a duplex double acting reciprocating pump making 140 strokes/minute, with a 6" diameter cylinder, a 10" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump?	322 gpm	268 gpm	161 gpm	81 gpm	
11	4374	B	In a refrigeration system, where multiple evaporators are operating at different temperatures, and serviced by a single compressor and condenser, the control of individual coil temperatures should be carried out by adjustment of the _____.	thermostatic expansion valve	back pressure regulating valve	king valve	box temperature solenoid valve	
11	4378	D	If you have a duplex single acting reciprocating pump making 140 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump?	79 gpm	23 gpm	91 gpm	45 gpm	
11	4380	A	If you have a duplex single acting reciprocating pump making 130 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump?	207 gpm	483 gpm	104 gpm	414 gpm	
11	4384	D	Excessively tight drive belts installed between a motor and a refrigeration compressor pulley may cause _____.	overheated bearings	unnecessary motor loading	noisy operation	all of the above	
11	4391	B	If you have a duplex single acting reciprocating pump making 130 strokes/minute, with a 5" diameter cylinder, a 13" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump?	347 gpm	134 gpm	67 gpm	267 gpm	
11	4394	A	The primary purpose of the liquid line strainer used in a refrigeration system is to prevent dirt and scale from entering the _____.	solenoid and expansion valves	compressor and receiver	condenser and liquid line	evaporator coil piping	

11	4396	A	If you have a simplex single acting reciprocating pump making 170 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 97% volumetric efficiency, what is the capacity of this pump?	50 gpm	202 gpm	101 gpm	84 gpm	
11	4402	C	If you have a duplex single acting reciprocating pump making 130 strokes/minute, with a 4" diameter cylinder, a 12" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump?	237 gpm	39 gpm	79 gpm	158 gpm	
11	4404	B	Cylindrical driers installed in halocarbon refrigerant systems should be arranged _____.	so that the liquid enters at the top and leaves at the bottom when located in the liquid line	so that the liquid enters at the bottom and leaves at the top when located in the liquid line	so that the gas enters at the bottom and leaves at the top when located in the suction line	horizontally if the drying agent is calcium oxide	
11	4405	B	The reading on the vernier caliper scale shown in figure "A" in the illustration is _____.	1.250 inches	1.500 inches	2.150 inches	2.500 inches	GS-0082
11	4407	D	If you have a simplex single acting reciprocating pump making 150 strokes/minute, with a 3" diameter cylinder, a 11" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump?	12 gpm	16 gpm	20 gpm	24 gpm	
11	4413	D	If you have a duplex single acting reciprocating pump making 130 strokes/minute, with a 5" diameter cylinder, a 11" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump?	249 gpm	57 gpm	226 gpm	113 gpm	
11	4414	A	If the flame of a Halide leak detecting torch burns yellow, which of the problems listed is indicated?	A restricted exploring tube	A refrigeration leak	A faulty reactor plate	Normal operation	

11	4419	A	The reading on the vernier caliper scale shown in figure "B" in the illustration is _____.	3.38 inches	3.48 inches	3.83 inches	4.45 inches	GS-0082
11	4420	C	The illustrated valve "A" needs to be repaired due to a leak across the valve disk. To repair the valve you should _____.	replace the entire valve bonnet and stem as a unit as provided by the manufacturer	remove the handwheel, then remove part #4 and #5, then replace the item #6 and reassemble in the reverse order	disassemble the valve and renew the replaceable valve disk seat	disassemble and renew the replaceable valve body seat	GS-0140
11	4422	B	What is the reading of the vernier micrometer caliper scale shown in figure "C" in the illustration?	0.3715 inch	0.4715 inch	0.4725 inch	0.4815 inch	GS-0091
11	4424	B	A totally white or yellow colored flame produced by a Halide torch being used to test for refrigerant leaks indicates _____.	no R-12 leakage	a partially clogged torch exploring tube	a defective torch reaction plate	a minute quantity of R-12 leakage	
11	4428	A	If you have a duplex single acting reciprocating pump making 130 strokes/minute, with a 3" diameter cylinder, a 10" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump?	37 gpm	123 gpm	18 gpm	74 gpm	
11	4431	D	As shown in the illustration, a section of standard weight, seamless steel pipe, has an external diameter of 8.5 inches. When the pipe, is bent into a 90 degree turn, the length of the outside edge of the curve "A-B" will exceed the length of the inside edge of the curve "C-D" by _____.	7.697 inches	9.176 inches	11.519 inches	13.352 inches	GS-0108
11	4432	B	All refrigerant recovered from small appliances must be _____.	sent to a designated reclaim facility for processing	contained in a refillable recovery cylinder	destroyed as unusable	used to clean out burn-outs	

11	4433	C	The reading on a vernier caliper scale is indicated as 3.360 inches. Which of the figures shown in the illustration represents this reading?	Figure B	Figure C	Figure E	Figure F	GS-0082
11	4434	B	Air conditioning duct-work begins at the large mixing chamber called the _____.	exhaust chamber	plenum chamber	intake chamber	vapor chamber	
11	4435	C	Foot valves are primarily designed to _____.	give a pump motor or driver positive protection when operating in a shutoff condition	provide a means of supplying sealing fluid for the impeller shaft stuffing box	enable a pump and its suction line to remain primed prior to starting the pump	afford the pumping system protection against water hammer and surging	
11	4436	D	One revolution at the handwheel of a reach rod operated valve will cause the valve stem to rotate _____.	one-fourth of a turn	one-half of a turn	three-fourths of a turn	one turn	
11	4437	C	If a block and tackle arrangement were rigged as shown in figure "C" in the illustration, the amount of force "P" required to hold the 250 pound load stationary would be _____.	83.33 lbs.	104.16 lbs.	125.00 lbs.	250.00 lbs.	GS-0110
11	4439	B	If you have a simplex single acting reciprocating pump making 270 strokes/minute, with a 4" diameter cylinder, a 6" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump?	132 gpm	33 gpm	66 gpm	99 gpm	
11	4443	D	In a small appliance using HFC-134a you would expect to see the greatest temperature drop across the _____.	evaporator	receiver	compressor	condenser	
11	4444	D	When air contains some moisture, but is not saturated, the dew point temperature is _____.	between the wet and dry bulb temperatures	equal to the total heat of air	higher than the wet bulb temperature	lower than the dry bulb temperature	
11	4445	C	The lathe tool shown as figure "L" in the illustration is commonly known as a/an _____.	boring tool	external threading tool	internal threading tool	universal turning tool	GS-0090

11	4447	B	If you have a simplex single acting reciprocating pump making 150 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump?	61 gpm	122 gpm	128 gpm	244 gpm	
11	4449	C	If you have a duplex single acting reciprocating pump making 140 strokes/minute, with a 3" diameter cylinder, a 12" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump?	193 gpm	24 gpm	48 gpm	97 gpm	
11	4450	A	What is the reading of the vernier caliper scale shown in figure "E" in the illustration?	4.112 inch	4.125 inch	5.112 inch	6.112 inch	GS-0092
11	4452	A	What is the reading of the vernier caliper scale shown in figure "D" in the illustration?	2.8350 inch	3.3750 inch	3.8350 inch	4.8350 inch	GS-0092
11	4454	C	When pumping down an air conditioning system to test the low pressure cutout switch, you should _____.	stop the compressor	secure the condenser	close the 'king' valve	stop the circulating pump	
11	4456	D	In the diagram, items '2A and 2B' represent the overboard discharge valves of the ballast system illustrated. Which of the following statements is correct if the length between perpendiculars is 500 feet, and the through hull opening is seven feet above the summer loadline?	Valve 2A must be positive closing, in addition to the indicated automatic non-return valve.	Valve 2B must be positive closing, in addition to the indicated automatic non-return valve.	Both valves must be positive closing, in addition to the ability to provide automatic non-return.	Both valves are correct as indicated in the illustration.	GS-0125
11	4457	D	If you have a duplex double acting reciprocating pump making 100 strokes/minute, with a 6" diameter cylinder, a 8" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump?	44 gpm	88 gpm	157 gpm	176 gpm	

11	4458	C	If you have a simplex single acting reciprocating pump making 150 strokes/minute, with a 3" diameter cylinder, a 5" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump?	42 gpm	21 gpm	11 gpm	35 gpm	
11	4459	D	If you have a simplex single acting reciprocating pump making 180 strokes/minute, with a 5" diameter cylinder, a 8" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump?	40.6 gpm	43.7 gpm	49.8 gpm	53.2 gpm	
11	4461	B	If you have a simplex single acting reciprocating pump making 150 strokes/minute, with a 6" diameter cylinder, a 13" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump?	107.7 gpm	113.4 gpm	215.4 gpm	226.8 gpm	
11	4463	C	The reading on the micrometer scale shown in figure "I" in the illustration is _____.	0.455 inch	0.500 inch	0.505 inch	0.550 inch	GS-0095
11	4464	D	If the people in an air conditioned room complain of being too cool, the trouble might be that the _____.	preheater has failed to cutout	air velocity is too low	relative humidity and dry bulb is high	relative humidity is too low	
11	4465	B	What is the value of the controlled variable that the automatic controller operates to maintain.	Set point	Control point	Deviation	Offset	
11	4466	B	The reading on a vernier caliper scale is indicated as 4.340 inches. Which of the figures shown in the illustration represents this reading?	Figure B	Figure C	Figure D	Figure E	GS-0082
11	4470	D	If you have a simplex single acting reciprocating pump making 150 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump?	104 gpm	52 gpm	91 gpm	26 gpm	

11	4471	C	The reading indicated on a vernier micrometer caliper scale is .9453 inches. Which of the figures in the illustration represents this reading?	Figure A	Figure C	Figure D	Figure G	GS-0091
11	4472	A	The shaft sleeve for the pump illustrated is identified by the item numbered as _____.	14	17	27	68	GS-0143
11	4473	A	If you have a duplex double acting reciprocating pump making 140 strokes/minute, with a 3" diameter cylinder, a 9" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump?	72 gpm	157 gpm	217 gpm	285 gpm	
11	4474	D	When air is at its dew point and there is no change in either the temperature or pressure, the air _____.	has a low absolute humidity	has the lowest relative humidity	cannot give up its moisture	will gain no additional moisture	
11	4475	C	If you have a simplex single acting reciprocating pump making 150 strokes/minute, with a 3" diameter cylinder, a 11" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump?	20.0 gpm	22.0 gpm	24.0 gpm	48.0 gpm	
11	4476	A	If you have a duplex single acting reciprocating pump making 270 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 81% volumetric efficiency, what is the capacity of this pump?	83 gpm	146 gpm	42 gpm	167 gpm	
11	4481	A	If you have a simplex single acting reciprocating pump making 180 strokes/minute, with a 5" diameter cylinder, a 6" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump?	40 gpm	160 gpm	80 gpm	96 gpm	
11	4482	C	The reading on the micrometer scale shown in figure "2" in the illustration is _____.	0.200 inch	0.220 inch	0.250 inch	0.300 inch	GS-0094

11	4483	B	What is the reading of the vernier micrometer caliper scale shown in figure "F" in the illustration?	0.3107 inch	0.3128 inch	0.3220 inch	0.3228 inch	GS-0091
11	4484	D	In a refrigeration system, the amount of superheat absorbed by the refrigerant is adjusted at the _____.	compressor	condenser	evaporator coil	expansion valve	
11	4487	B	If you have a simplex single acting reciprocating pump making 160 strokes/minute, with a 6" diameter cylinder, a 12" stroke and operating with 97% volumetric efficiency, what is the capacity of this pump?	57 gpm	114 gpm	118 gpm	236gpm	
11	4489	B	If you have a simplex single acting reciprocating pump making 160 strokes/minute, with a 4" diameter cylinder, a 12" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump?	33.3 gpm	44.4 gpm	51.1 gpm	66.6 gpm	
11	4490	A	If you have a duplex single acting reciprocating pump making 100 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump?	44 gpm	22 gpm	20 gpm	88 gpm	
11	4492	B	If you have a duplex double acting reciprocating pump making 130 strokes/minute, with a 5" diameter cylinder, a 11" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump?	113 gpm	226 gpm	249 gpm	57 gpm	
11	4493	C	Which of the following listed illustrated joint preparations correctly depicts a single "J" groove?	3A	4A	5A	6A	GS-0077
11	4494	A	The lathe tool shown as figure "U" in the illustration is commonly known as a/an _____.	cutoff or parting tool	left cut side-facing tool	right side end facing tool	universal turning tool	GS-0090

11	4495	D	The thermal bulb of an expansion valve that is attached to the evaporator tail coil should be _____.	installed on the bottom of the suction line	installed between the suction strainer and compressor	painted to prevent corrosion	insulated after installation	
11	4496	C	In the hydraulic anchor windlass system illustrated, if the power to the electric motor is on, but the wildcat does not turn, the pressure developed on either side of the system increases to half of the normal operating pressure regardless of the direction of movement in which the servo control is placed, the probable cause is the _____.	replenishing pump coupling is broken	relief valve is not opening	manual transfer valve is in the wrong position for the main pump being operated	spring set point for "I" is too high	GS-0160
11	4497	B	If you have a simplex single acting reciprocating pump making 150 strokes/minute, with a 7" diameter cylinder, a 13" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump?	146 gpm	154 gpm	162 gpm	170 gpm	
11	4498	A	Item "B" in the pump illustration is the _____.	packing gland	stuffing box	shaft sleeve	wearing ring	GS-0129
11	4499	B	If you have a duplex double acting reciprocating pump making 170 strokes/minute, with a 4" diameter cylinder, a 11" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump?	91 gpm	181 gpm	249 gpm	45 gpm	
11	4500	C	The valve shown in the illustration is used to _____.	provide the function of compressor unloading	regulate refrigerant flow into the evaporator by reacting directly to the evaporator pressure	maintain back pressure in the evaporator coils at a pressure higher than the remaining coils in a multi-box system	A bellows operated condenser water regulating valve	RA-0006
11	4501	C	The hydraulic graphic symbol illustrated as Fig. C is used to depict a/an _____.	bi-directional rotating motor	unidirectional rotating motor	variable output, single direction flow pump	bi-directional flow pump	GS-0068

11	4526	A	When using a portable droplight, you should always insure that the _____.	bulb is protected by a shield or guard	extension cord is always yellow and clearly marked 'FOR DROP LIGHT USE ONLY'	bulb capacity does not exceed 75 watts	all of the above	
11	4536	D	Some of the hazards associated with air-operated power tools may be avoided if the operator would _____.	inspect the hoses for cracks and other defects	remove jewelry and loose clothing	bleed air pressure from the lines before breaking the connections	all of the above	
11	4556	A	All portable electric tools should have a ground connection to prevent _____.	electric shock if the tool is shorted	burning out the motor from an overload	overloading the motor from a short	grounding the plastic case through a short	
11	4911	D	Figure "B" in the illustration is improperly installed. A restriction will develop in this hose _____.	at the right hand end, regardless of the direction of flow	at the left hand end, regardless of the direction of flow	ahead of the direction of flow	trailing the direction of flow	GS-0063
11	4974	B	Which of the following statements represents an operating characteristic of neoprene or rubber stern tube bearings?	No stern tube packing is required.	The bearing is lubricated by seawater.	Propeller shaft vibration will not damage these bearings.	Neoprene bearings are less abrasion resistant than bronze bearings.	
11	5000	D	As shown in the illustration, a section of standard weight, seamless steel pipe, has an external diameter of 4.0 inches. When the pipe, is bent into a 90 degree turn, the length of the outside edge of the curve "A-B" will exceed the length of the inside edge of the curve "C-D" by _____.	1.05 inches	1.25 inches	2.67 inches	6.28 inches	GS-0108
11	5001	A	The heat added at line #5 shown in the illustration represents _____.	superheat	the latent heat of fusion only	the latent heat of vaporization	sublimation	SG-0001
11	5106	D	Which of the precautions listed should to be observed when working with oxy-acetylene welding equipment?	Bottles should be labeled air and gas.	Keep cylinders away from exposure to cold temperatures.	Keep oxygen regulators and valves coated with a light film of oil.	Keep gas cylinders supported so that they can not tip over.	

11	5116	A	Protective equipment while carrying out oxyacetylene welding should include the use of _____.	goggles	cotton gloves	trousers with deep pockets	wool jackets	
11	5117	B	If high relative humidity is maintained in a cargo hold, there is a significant possibility that _____. I. there will be an accumulation of static electricity II. mold will grow and contaminate the cargo	I only	II only	Both I and II	Neither I nor II	