

U.S.C.G. Merchant Marine Exam
First Assistant Engineer, Unlimited
Q512 General Subjects II
(Sample Examination)

Choose the best answer to the following Multiple Choice Questions.

1. During a dry-docking survey it is necessary to check the freeboard marking of a vessel. Which of the following certificates addresses vessel freeboard markings?
- (A) Tonnage Certificate
 - (B) International Oil Pollution Prevention Certificate
 - (C) International Load Line Certificate
 - (D) MARPOL Certificate

If choice C is selected set score to 1.

2. As a manager, which of the following conflict management styles is considered the most appropriate for resolving conflict and is considered both an assertive and a cooperative approach?
- (A) Collaborating
 - (B) Forcing
 - (C) Avoiding
 - (D) Accommodating

If choice A is selected set score to 1.

3. Machinery spaces must be designed to minimize the exposure of personnel to noise in accordance with U.S. regulations. Unmanned machinery space noise must not exceed which noise level?
- (A) 75 dB(A)
 - (B) 85 dB(A)
 - (C) 90 dB(A)
 - (D) 110 dB(A)

If choice D is selected set score to 1.

4. In an air conditioning system, what is the name of the chamber where the duct-work originates?
- (A) plenum chamber
 - (B) vapor chamber
 - (C) exhaust chamber
 - (D) intake chamber

If choice A is selected set score to 1.

5. The gas that exists in the stratosphere forming a protective shield that helps to protect the environment from the harmful effects ultraviolet radiation is called what?

- (A) nitrogen
- (B) ozone
- (C) oxygen
- (D) radon

If choice B is selected set score to 1.

6. A room humidistat initiates the lowering of the humidity of the conditioned supply air to a space, while the actual process is accomplished by what means?

- (A) lowering the cooling coil temperature and raising the reheater temperature
- (B) raising both the cooling coil temperature and the reheater temperature
- (C) lowering both the cooling coil temperature and the reheater temperature
- (D) raising the cooling coil temperature and lowering the reheater temperature

If choice A is selected set score to 1.

7. Which of the following shipboard groups would be an example of an informal group?

- (A) Those officers and crew assigned to a maintenance task on a ship.
- (B) Those officers and crew assigned to the safety committee of a ship.
- (C) Those officers and crew assigned to a particular ship.
- (D) Those officers and crew assigned to the engineering department of a ship.

If choice A is selected set score to 1.

8. In accordance with the international MARPOL Annex VI regulations, in the absence of an exhaust gas cleaning system, what is the maximum allowable sulphur content for a fuel to be burned while the ship is operating in an emissions control area?

- (A) 1.5%
- (B) 3.0%
- (C) 4.5%
- (D) 6.0%

If choice A is selected set score to 1.

9. You have completed repairs to a small galley refrigerator which uses a capillary tube and a hermetic compressor. The repairs required complete evacuation of the refrigerant and you find that you do not have a proper scale to weighing the amount of refrigerant you will recharge into the system. As the unit is critical to galley operations you must try and restore it to service. The most prudent course of action would be to do which of the following?
- (A) Add a significant over charge of refrigerant, to ensure the condenser is full, then slowly remove refrigerant as you monitor pressures and temperatures.
 - (B) Add liquid refrigerant to the suction side of the compressor until you see liquid coming from the evaporator suction.
 - (C) Add twice the recommended amount of oil to the compressor, to restrict refrigerant flow, then slowly recharge until the compressor oil level returns to normal.
 - (D) Add an undercharge of refrigerant to get the system started, in order to not flood the compressor with liquid, then slowly add refrigerant as you monitor pressures and temperatures.

If choice D is selected set score to 1.

10. Vapor bubbles present in the liquid upon arrival to the thermal expansion valve in a refrigeration system may cause erosion of the expansion valve's needle and seat. This, in turn, could cause what condition?
- (A) TXV freezing open
 - (B) TXV overheating
 - (C) TXV freezing shut
 - (D) TXV hunting

If choice D is selected set score to 1.

11. 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?
- (A) pressurize the system with nitrogen
 - (B) open the system vent to the atmosphere and allow the pressure to equalize
 - (C) charge the system until it is completely filled with liquid refrigerant
 - (D) heat the refrigerant

If choice D is selected set score to 1.

12. For newly constructed vessels, extensive shipyard repair or a vessel's modification period, what does a shipyard's 'Gantt' chart represent?
- (A) Daily actual shipyard progress, per item, vs. estimated.
 - (B) Project's shipyard fiscal and man hours expenditures per item/goal.
 - (C) Daily shipyard's production figures and progress.
 - (D) Master schedule of time/man hours vs. project's significant goals/items for the duration of the project.

If choice D is selected set score to 1.

- 13.** Referring to the illustrated psychrometric chart, suppose during the cooling season that air passes over a cooling coil with a mean surface temperature above the dew point temperature, and this results in sensible heat loss with no change in moisture content. What statement represents the direction of the air conditioning process line? Illustration GS-RA-22
- (A) The air conditioning process line is horizontal with the coil outlet to the right of the coil inlet.
 - (B) The air conditioning process line is horizontal with the coil outlet to the left of the coil inlet.
 - (C) The air conditioning process line is vertical with the coil outlet below the coil inlet.
 - (D) The air conditioning process line is vertical with the coil outlet above the coil inlet.

If choice B is selected set score to 1.

- 14.** As a chief engineer, which of the following instructions would be most appropriately entered into the Chief Engineer's night orders due to the non-routine nature of the instruction?
- (A) All discharges, transfers, or disposal of bilge water must be logged in the oil record book by the officer in charge of the operation.
 - (B) The officer in charge of the engineering watch shall notify the chief engineer without delay when No.2 SSDG repairs are complete and the generator has been prepared for testing.
 - (C) When the engine room is in the periodic unmanned condition, the duty engineer shall be immediately available and on call to attend the machinery spaces.
 - (D) The officer in charge of the engineering watch shall notify the chief engineer without delay when a malfunction occurs which may be such as to endanger the safe operation of the ship.

If choice B is selected set score to 1.

- 15.** When measuring vibration, an engineer should be concerned with recording the velocity or displacement of the measurement. Which other factor should also be of concern?
- (A) kW
 - (B) Frequency
 - (C) Amplitude
 - (D) Amps

If choice B is selected set score to 1.

- 16.** Concerning the arrangement of equipment and associated hoses shown in the illustration, which statement is true? Illustration GS-RA-58
- (A) When recovering refrigerant from the centrifugal chiller using this method, it is possible to achieve the recovery levels required by law without any further recovery.
 - (B) When recovering refrigerant from the centrifugal chiller using this method, it minimizes the risk of chiller tube freeze-up.
 - (C) When recovering refrigerant from the centrifugal chiller using this method, the vent hose connection should be closed.
 - (D) When recovering refrigerant from the centrifugal chiller using this method, it is permissible to exceed 90% of the weight capacity of the refrigerant drum.

If choice B is selected set score to 1.

17. As Chief Engineer you join a vessel enrolled in Continuous Machinery Survey. Approximately what percent of the machinery should be surveyed per year throughout the Special Survey cycle?

- (A) 10%
- (B) 20%
- (C) 25%
- (D) 50%

If choice B is selected set score to 1.

18. Some managers think that the average person has a dislike for work, avoids responsibility, and cannot be trusted. What type of leadership style is such a manager likely to adopt?

- (A) Supportive, participative leadership style.
- (B) Developmental leadership style.
- (C) Structured, autocratic leadership style.
- (D) Transformational leadership style.

If choice C is selected set score to 1.

19. What is the purpose of running a refrigeration compressor in short intermittent spurts or throttling the suction isolation valve when starting the system after a prolonged shutdown?

- (A) let the refrigerated compartment cool gradually
- (B) prevent liquid slugging or overloading the compressor
- (C) allow refrigerant vapor cycling time
- (D) determine actual compressor oil level

If choice B is selected set score to 1.

20. Which of the following statements represents the acceptable practice to follow to prevent mixing of potentially incompatible fuels in a heavy fuel oil settling tank?

- (A) Before shifting storage tank transfer pump suctions to another set of tanks, ideally the recipient heavy fuel oil settling tank should be drained of moisture and solids first.
- (B) Before shifting storage tank transfer pump suctions to another set of tanks, ideally the recipient heavy fuel oil settling tank should be brought to the proper settling temperature first.
- (C) Before shifting storage tank transfer pump suctions to another set of tanks, ideally the recipient heavy fuel oil settling tank should be stripped empty first.
- (D) Before shifting storage tank transfer pump suctions to another set of tanks, ideally the recipient heavy fuel oil settling tank should be brought to 50% volumetric capacity first.

If choice C is selected set score to 1.

21. If increasing the cooling water flow to a refrigeration condenser fails to lower the condenser pressure, the probable cause may be due to what condition?

- (A) partially blocked thermal expansion valve
- (B) excessive amount of non-condensable gases trapped in the condenser
- (C) an evaporator coil in need of defrosting
- (D) a low level of Freon in the receiver

If choice B is selected set score to 1.

22. A containership is scheduled to depart the Port of Houston, TX at 0600 on April 7th on a voyage to exceed 48 hours. What is the EARLIEST time that the steering gear could be tested prior to getting underway and is in compliance 46 CFR Subchapter I (Cargo and Miscellaneous Vessels)?

- (A) 0600 April 6th
- (B) 1200 April 6th
- (C) 1800 April 6th
- (D) 0000 April 7th

If choice C is selected set score to 1.

23. A vessel you are sailing on as chief engineer had its last dry-docking survey 2 years prior and is not enrolled in an underwater survey program in lieu of dry-docking. When is the next dry-docking due?

- (A) 1 year
- (B) 6 months
- (C) 2 years
- (D) 3 years

If choice A is selected set score to 1.

24. Before training is to be planned for, it is necessary to conduct a training needs analysis. What would be the best source of information to analyze before providing general safety training?

- (A) Conduct a careful review of all accident and incident investigations.
- (B) Conduct a careful review of all marine casualty and damage reports filed.
- (C) Conduct a careful review of all manufacturer technical manuals for safety related instructions.
- (D) Conduct a careful review of all vessel procedures and policy manuals for safety related instructions.

If choice A is selected set score to 1.

25. Which of the following comprehensive computerized maintenance system database modules would contain data such as part numbers and part stowage locations?

- (A) Inventory management module
- (B) Equipment management module
- (C) Planned maintenance management module
- (D) Requisitions management module

If choice A is selected set score to 1.

26. What is the critical first step that must be carried out before executing a plan?

- (A) Setting an objective or goal to be achieved by the plan.
- (B) Assessing present and future conditions affecting achievement of the plan.
- (C) Identifying present and future conditions affecting achievement of the plan.
- (D) Developing a systematic approach to achievement of the plan.

If choice A is selected set score to 1.

27. If a vessel is to be laid up for an extended period of time with minimal utilities provided from ashore, what statement is true as it relates to keeping gearboxes, turbine casings, and engine crankcases dry and free of moisture?

- (A) A combination of mechanical circulation of air and dehumidification should be used.
- (B) A combination of an absence of air circulation and dehumidification should be used.
- (C) A combination of an absence of air circulation and humidification should be used.
- (D) A combination of mechanical circulation of air and humidification should be used.

If choice A is selected set score to 1.

28. EPA Clean Air Act rules permit refrigerant to be released to the atmosphere under which of the following conditions?

- (A) when testing a system for leaks using R-12 and nitrogen
- (B) when release is considered 'de minimis'
- (C) when adding oil to a compressor
- (D) during replacement of a compressor

If choice B is selected set score to 1.

29. Which of the following comprehensive computerized maintenance system database modules would contain data related to spare parts?

- (A) Inventory management module
- (B) Planned maintenance management module
- (C) Requisitions management module
- (D) Equipment management module

If choice A is selected set score to 1.

30. If a refrigeration system were short of refrigerant, besides an elevated box temperature, what would be an observable symptom?

- (A) short-cycling of the compressor on the water failure switch
- (B) high suction pressure
- (C) continuous running of the compressor
- (D) high discharge pressure

If choice C is selected set score to 1.

31. Consider the following training objective for a training session designed for training your crew how to pump bilges:

"Using the engine room bilge system of the M/V Underway where a bilge pocket requires pumping out and the automated bilge pumping controls have been disabled, by the end of the training session the participants will be able to pump an engine room bilge pocket dry manually to the bilge water holding tank in conformance with the vessel's engine room bilge pumping procedure checklist. There shall be no violations of the domestic and international pollution prevention regulations."

What is the "action" verb associated with the above objective?

- (A) shall be
- (B) will be able to pump
- (C) have been disabled
- (D) using

If choice B is selected set score to 1.

32. According to 46 CFR regulations pertaining to periodic tests and inspections as related to machinery and equipment, what would be the basis for conducting tests and inspections of a feed water regulator for a boiler as conducted by a marine inspector during a periodic ship inspection?

- (A) The marine inspector conducts any tests and inspections as necessary to check for safe operation of the feed water regulator.
- (B) The marine inspector conducts a pneumatic pressure test of the feed water line including the feed water regulator.
- (C) The marine inspector conducts both an internal and an external inspection of the feed water regulator.
- (D) The marine inspector conducts a hydrostatic test of the feed water line including the feed water regulator.

If choice A is selected set score to 1.

33. It is absolutely essential that hydronic heating system hot water piping be kept free of air. Assuming that a system is initially properly filled with water, what is the primary source of air contamination?

- (A) The introduction of air via the makeup water.
- (B) The introduction of air via the expansion tank vent.
- (C) The introduction of air with the convector steam supply.
- (D) The introduction of air via the atmospheric drains tank vent.

If choice A is selected set score to 1.

34. Overfilling a refrigerant container is extremely dangerous because of the high pressures generated. The generation of pressure is the result of what?

- (A) discharge pressure from the recovery cylinder
- (B) vapor pressure of the refrigerant at saturation temperature
- (C) hydrostatic pressure of the expanding liquid
- (D) discharge pressure of the recovery compressor

If choice C is selected set score to 1.

35. There are many tasks to carry out prior to and during bunkering. What is the best way to insure no task is missed?

- (A) Use of the certificate of inspection.
- (B) Use of the vessel oil pollution response plan.
- (C) Use of the declaration of inspection.
- (D) Use of a bunkering safety checklist.

If choice D is selected set score to 1.

36. When performing mariner competency assessment onboard a vessel, as an assessor you must be mindful of the potential influence of other crew members. Which of the following statements regarding this potential influence is true?

- (A) While you should never allow an assessment candidate to observe others being assessed for the same competency, other crew members can be allowed to interfere with the assessment.
- (B) While you can allow an assessment candidate to observe others being assessed for the same competency, you should never allow other crew members to interfere with an assessment.
- (C) You should never allow an assessment candidate to observe others being assessed for the same competency, and you should never allow other crew members to interfere with an assessment.
- (D) You can allow an assessment candidate to observe others being assessed for the same competency, and you can allow other crew members to interfere with an assessment.

If choice C is selected set score to 1.

- 37.** In planning for a fire and emergency drill, to insure drill success within the context of a comprehensive fire and emergency training program, what should be planned for?
- (A) The fire drill should be a simulated outbreak in a low fire risk area and for each fire drill the location should remain the same.
 - (B) The fire drill should be a simulated outbreak in a low fire risk area and for each fire drill the location should be changed.
 - (C) The fire drill should be a simulated outbreak in a high fire risk area and for each fire drill the location should be changed.
 - (D) The fire drill should be a simulated outbreak in a high fire risk area and for each fire drill the location should remain the same.

If choice C is selected set score to 1.

- 38.** Which recovery procedure should be used to minimize the loss of oil from the system during the recovery of refrigerant from small appliances such as a water cooler?
- (A) initial recovery
 - (B) vapor recovery
 - (C) liquid recovery
 - (D) vapor-liquid recovery

If choice B is selected set score to 1.

- 39.** What is meant by the term empowering employees?
- (A) Gaining employee acceptance and identification based on personal charisma.
 - (B) Rewarding employees with positive rewards such as the availability of overtime.
 - (C) Gaining employee compliance under threat of punishment such as pulling overtime.
 - (D) Granting employees authority to make key decisions by delegation.

If choice D is selected set score to 1.

- 40.** An important communication tool for managers is known as active listening. It helps better insure that managers understand employees and that feedback is encouraged. What is active listening?
- (A) Active listening is when you allow the employee to finish what they are saying before speaking.
 - (B) Active listening is when you maintain eye contact with the employee the whole time they are speaking.
 - (C) Active listening is when you make a response that states what you have heard from the employee.
 - (D) Active listening is when you listen to an employee with undivided attention and not be distracted.

If choice C is selected set score to 1.

41. If it is desired to perform a thermo graphic analysis of a piece of equipment with a suspected possible fault and compare the thermal signature with similar fault-free equipment, what is the name of the thermography performed?

- (A) Spectral thermography.
- (B) Comparative thermography.
- (C) Baseline thermography.
- (D) Thermal trending.

If choice B is selected set score to 1.

42. In order to establish a good climate for communication it is important to establish mutual trust between the employee and the manager. Which of the following facilitates the trust of employees in managers?

- (A) Disciplining fairly and consistently, showing contempt for your employee's abilities, and advocating on their behalf.
- (B) Disciplining unfairly and inconsistently, respecting your employee's abilities, and advocating on their behalf.
- (C) Disciplining fairly and consistently, respecting your employee's abilities, and requiring them to advocating on their own behalf.
- (D) Disciplining fairly and consistently, respecting your employee's abilities, and advocating on their behalf.

If choice D is selected set score to 1.

43. The rupture disc on a low pressure centrifugal refrigeration unit is used as an over pressure protection device and is set to relieve at 15 psig and is most likely to lift when the compressor is idle? Where is the rupture disc located?

- (A) on top of the condenser shell
- (B) at the top of the upper chamber of the economizer
- (C) at the discharge of the compressor
- (D) on top of chiller evaporator shell

If choice D is selected set score to 1.

44. If a vessel is to be laid up for an extended period of time with minimal utilities provided from ashore, boilers may be laid up dry. What statement is true as it relates to protecting boiler firesides?

- (A) A cap may be installed on the forced draft air intake, and a ventilating unit may be installed to blow cooled air into the furnace.
- (B) A cap may be installed on the forced draft air intake, and a ventilating unit may be installed to blow heated air into the furnace.
- (C) A cap may be installed on the uptake outlet, and a ventilating unit may be installed to blow cooled air into the furnace.
- (D) A cap may be installed on the uptake outlet, and a ventilating unit may be installed to blow heated air into the furnace.

If choice D is selected set score to 1.

45. The fluid used as a source of actuating power against the underside of the unloader power element piston of the refrigeration compressor capacity control mechanism illustrated is obtained from where? Illustration GS-RA-13

- (A) gas discharge from the compressor
- (B) discharge of the compressor lube oil pump
- (C) high side liquid receiver
- (D) discharge of a secondary hydraulic pump specifically installed for this operation

If choice B is selected set score to 1.

46. As a senior engineer involved in new vessel construction, what would you consider to be the final proof of proper shaft alignment?

- (A) Confirm shaft bearing reaction figures/loads, as designed per bearing.
- (B) On a steam turbine vessel, rely on reduction gear tooth contact solely.
- (C) Rely on optical or laser alignment figures/readings solely.
- (D) On a motor vessel, rely on crankshaft deflections solely.

If choice A is selected set score to 1.

47. According to 46 CFR regulations pertaining to periodic tests and inspections as related to machinery and equipment, what statement is true concerning tail shaft examinations?

- (A) Tail shaft examination requirements only apply to vessels in ocean service and the inspection must be conducted in the presence of a marine inspector.
- (B) Tail shaft examination requirements only apply to vessels in ocean service and the inspection must be conducted in the presence of the chief engineer.
- (C) Tail shaft examination requirements only apply to vessels in ocean and coastwise service and the inspection must be conducted in the presence of a marine inspector.
- (D) Tail shaft examination requirements only apply to vessels in ocean and coastwise service and the inspection must be conducted in the presence of the chief engineer.

If choice C is selected set score to 1.

48. When transitioning from full sea speed to maneuvering speed on a slow-speed diesel-powered motor vessel featuring a direct-drive fixed-pitch propeller propulsion arrangement, how should this be accomplished?

- (A) The engine should be decelerated from full sea speed to maneuvering speed very gradually, but should transition through any critical speeds without any lingering.
- (B) The engine should be decelerated from full sea speed to maneuvering speed very gradually, even if it means lingering for extended periods of time at critical speeds.
- (C) The engine should be decelerated from full sea speed to maneuvering speed very gradually, without any concern for critical speeds as they will not be encountered.
- (D) The engine should be decelerated from full sea speed to maneuvering speed very quickly and should transition through any critical speeds without any lingering.

If choice A is selected set score to 1.

49. What type of maintenance system would be associated with manufacturer recommendations as a function of machinery running hours?

- (A) Corrective maintenance system
- (B) Planned maintenance system
- (C) Predictive maintenance system
- (D) Condition-based maintenance system

If choice B is selected set score to 1.

50. When transitioning from maneuvering speed to full sea speed on a slow-speed diesel-powered motor vessel featuring a direct-drive fixed-pitch propeller propulsion arrangement, how should this be accomplished?

- (A) The engine should be accelerated from maneuvering speed to at sea speed very gradually, without any concern for critical speeds as they will not be encountered.
- (B) The engine should be accelerated from maneuvering speed to at sea speed very gradually, but should transition through any critical speeds without any lingering.
- (C) The engine should be accelerated from maneuvering speed to at sea speed very gradually, even if it means lingering for extended periods of time at critical speeds.
- (D) The engine should be accelerated from maneuvering speed to at sea speed very quickly and should transition through any critical speeds without any lingering.

If choice B is selected set score to 1.

51. An important component of pre-planning for fire emergencies is the general arrangement drawing. What type of drawing is the general arrangement drawing?

- (A) Side elevation view
- (B) Top plan view
- (C) Perspective view
- (D) End elevation view

If choice A is selected set score to 1.

52. Concerning the proper installation of the sensing bulb of a thermal expansion valve that is attached to the evaporator tail coil on a horizontal run, which statement is true?

- (A) the bulb should be attached so that the pinched off tubing should be oriented down and the capillary tube running to the valve diaphragm should be oriented up
- (B) the bulb should be attached so that the pinched off tubing should be oriented to one side and the capillary tube running to the valve diaphragm should be oriented to the opposite side
- (C) the bulb should be attached with no regard to the orientation of the pinched off tubing or the capillary tube running to the valve diaphragm
- (D) the bulb should be attached so that the pinched off tubing should be oriented up and the capillary tube running to the valve diaphragm should be oriented down

If choice A is selected set score to 1.

53. Referring to the illustrated single zone HVAC system diagram, what statement is true concerning the damper controls? Illustration GS-RA-09

- (A) The exhaust and outside air dampers are normally open and the recirculation damper is normally closed and all three dampers are controlled by a single pilot air signal.
- (B) The exhaust and outside air dampers are normally closed and the recirculation damper is normally open and all three dampers are controlled by a single pilot air signal.
- (C) The exhaust and outside air dampers are normally closed and the recirculation damper is normally open and each damper is controlled by its own pilot air signal.
- (D) The exhaust and outside air dampers are normally open and the recirculation damper is normally closed and each damper is controlled by its own pilot air signal.

If choice B is selected set score to 1.

54. If a new assistant engineer reports onboard, ideally, who should conduct the familiarization training specific and relevant to the engineer's routine maintenance and watch keeping duties?

- (A) The designated ship's training officer
- (B) Chief engineer
- (C) First assistant engineer
- (D) The 3rd assistant engineer being relieved

If choice D is selected set score to 1.

55. As a chief engineer on a motor vessel in a shipyard undergoing extensive repairs/modifications or being repaired after a significant grounding, what factors would you consider paramount to insure the main engine and line shafting are properly aligned?

- (A) Confirm proper clearances of all crankshaft and line shaft bearings.
- (B) Rely on shipyard's optical/laser alignment figures.
- (C) Physically check all main engine bed frame hold down bolts.
- (D) Ascertain that crankshaft deflections are within limits and that main shaft bearing reactions are as per design.

If choice D is selected set score to 1.

56. An important component of pre-planning for fire emergencies is the fire control plan. Which statement is true concerning the fire control plan for a vessel?

- (A) The fire control plan is a set of drawings for each deck of the vessel and contains information on vessel arrangements and fire suppression systems and locations of firefighting equipment.
- (B) The fire control plan is a set of written descriptions for each deck of the vessel and contains information on vessel arrangement and fire suppression systems and locations of firefighting equipment.
- (C) The fire control plan is a set of drawings for each deck of the vessel and contains information for how to extinguish a fire in a particular space.
- (D) The fire control plan is a set of written instructions and contains information for how to extinguish a fire in a particular space.

If choice A is selected set score to 1.

57. As a chief engineer you are reviewing the engine room logbook. You must ensure that all entries are made properly. What should be your criteria for how a watch officer makes a correction to an incorrect log entry?

- (A) The incorrect entry should be completely obliterated and the new correct entry made just below the obliterated incorrect entry.
- (B) The new correct entry should be written directly on top of the old incorrect entry making every effort to cleverly disguise the incorrect entry.
- (C) The incorrect entry is to be completely erased and the new correct entry written on top of the erasure so no evidence remains of the incorrect entry.
- (D) The incorrect entry should have a thin line drawn through the error and be initialed by the person making the correction so that the incorrect entry is still visible.

If choice D is selected set score to 1.

58. As an engineering department manager in dealing with a grievance presented by an unlicensed engine department crew and union member, what documentation spells out the grievance procedure?

- (A) Collective Bargaining Agreement between Company and Union
- (B) Shipping Articles of Agreement
- (C) Title 46 CFR U.S. Coast Guard (Shipping)
- (D) Title 29 CFR Department of Labor

If choice A is selected set score to 1.

59. Which of the following would be a positive outcome associated with performing a trend analysis of data acquired from lube oil testing, vibration sensors, performance data sensors, and thermo graphic sensors?

- I) Avoidance of catastrophic failures.
- II) Determining the need of when to perform corrective maintenance.
- III) Improving the overall effectiveness of the engineering plant.

- (A) I only.
- (B) II only.
- (C) I and II only.
- (D) I, II, and III.

If choice D is selected set score to 1.

60. In general, the thermal bulb for a thermal expansion valve used in a reciprocating air conditioning system is usually charged with what substance?

- (A) mercuric sulfate
- (B) bees wax
- (C) distilled water
- (D) the same refrigerant as the system

If choice D is selected set score to 1.

61. If it is necessary to increase the operating head pressure of the refrigeration system using the device shown in the illustration, what should be done? Illustration GS-RA-14

- (A) "2" should be turned to further compress the spring
- (B) "2" should be turned to relax the compression of the spring
- (C) "4" should be rotated to compress the enclosed bellows
- (D) "4" should be rotated to relax the enclosed bellows

If choice A is selected set score to 1.

- 62.** A sequence-of-events diagram can be a useful graphical tool used for root cause failure analysis. Several software programs are able to generate such diagrams. What statement concerning sequence-of-events diagrams is true?
- (A) The terms "qualifiers" and "assumptions" are interchangeable, and as a consequence the same symbol is used to represent both within the diagram.
 - (B) There typically will be multiple "incidents" that sequentially lead to a single "event" within the investigation diagram.
 - (C) There typically will be multiple "events" that sequentially lead to a single "incident" within the investigation diagram.
 - (D) There is no limit to how many "incidents" are included within the diagram for a particular root cause failure analysis investigation.

If choice C is selected set score to 1.

- 63.** If the discharge reed valves used in a refrigeration compressor are leaking badly, what statement is true?
- (A) the reed valves should be reground and relapped
 - (B) the low side pressure will indicate below normal
 - (C) the high-pressure cutout setting should be lowered
 - (D) the reed valves should be replaced

If choice D is selected set score to 1.

- 64.** An obstructed expansion valve may be indicated by an incompletely cooled evaporator and what other symptom?
- (A) frosting at the evaporator inlet
 - (B) frosting at the suction side of the compressor
 - (C) a higher than normal discharge pressure
 - (D) a decrease in the amount of frosting across the drier

If choice A is selected set score to 1.

- 65.** What could cause a lower efficiency and a higher bypass factor for an air conditioning cooling coil?
- (A) An increase in ambient pressure and temperature.
 - (B) Using material with a higher thermal expansion ratio.
 - (C) Corrosion wasting away large sections of the fins attached to the cooling coil.
 - (D) Chemically cleaning the coil.

If choice C is selected set score to 1.

- 66.** The coil temperature measured at the expansion valve sensing bulb of an operating system is 10°F. The low side pressure with the compressor running as shown on the gauge illustrated indicates 15 psig. What adjustments or changes, if any, should be made to the system? Illustration GS-RA-16
- (A) The evaporator coils need to be steam cleaned or high-pressure washed.
 - (B) The liquid line strainer is obviously fouled and needs to be cleaned.
 - (C) The expansion valve should not be adjusted, as the degree of superheat is within the accepted range.
 - (D) The filter drier needs to be changed to increase the suction pressure.

If choice C is selected set score to 1.

- 67.** You are installing a new refrigeration system aboard your vessel. The system comes with a 240 psi rupture disk, a safety valve set at 240 psi and a pressure gauge connection and gauge. According to the federal code of regulations, what is the preferred setup for installing the equipment on the condenser?
- (A) Rupture disk closest to the condenser, then pressure gauge then safety valve in series after the rupture disk.
 - (B) The rupture disk, safety valve, and pressure gauge are all piped in parallel.
 - (C) Pressure gauge closest to the condenser, then safety valve then rupture disk in series after the pressure gauge.
 - (D) Safety valve closest to the condenser, then pressure gage then rupture disk in series after the safety valve.

If choice D is selected set score to 1.

- 68.** On a PERT network (or arrow or line), what do the circles which are the beginning points or ending points for arrows or lines represent?
- (A) The circles are numbered and represent the task activity identification number.
 - (B) The circles are not numbered and represent milestones for task accomplishment.
 - (C) The circles are numbered and represent the estimated duration of task.
 - (D) The circles are not initially numbered, but when numbered represent the actual task completion time.

If choice B is selected set score to 1.

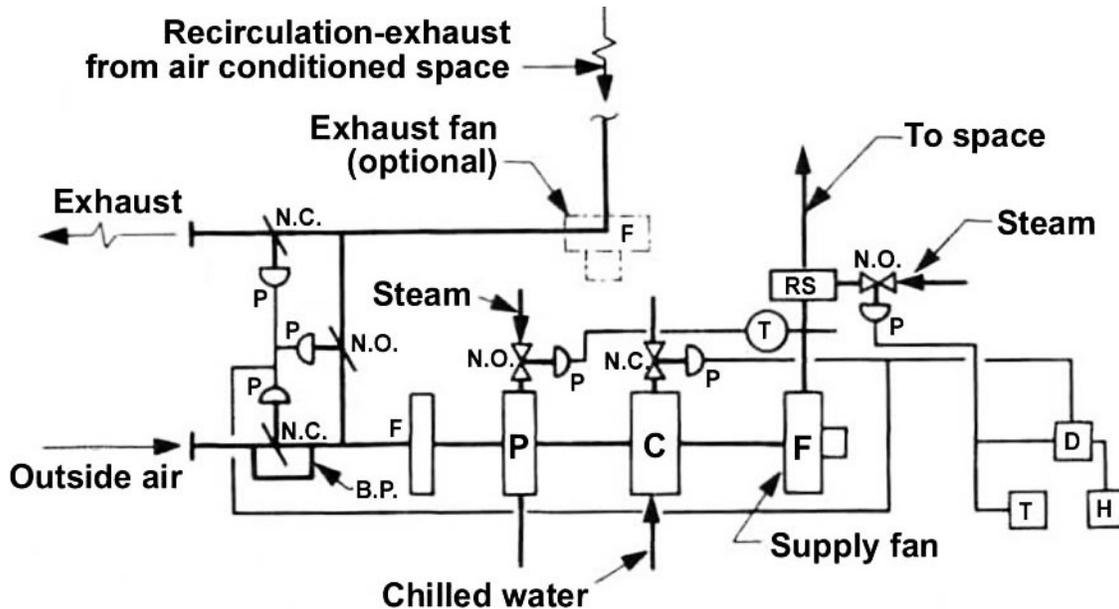
- 69.** If the initial report or automatic fire detection equipment are insufficient to provide adequate information to properly size-up a fire, an exploratory survey team consisting of at least two people may be required for reconnaissance purposes. How should the survey team members be equipped?
- (A) At least one team member should be wearing full protective gear and at least one other team member should be wearing a smoke filtering gas mask.
 - (B) At least one team member should be wearing full protective gear and at least one other team member should be wearing a self-contained breathing apparatus.
 - (C) Each survey team member should be wearing full protective gear and a smoke filtering gas mask.
 - (D) Each survey team member should be wearing full protective gear and a self-contained breathing apparatus.

If choice D is selected set score to 1.

- 70.** Charging liquid HCFC-123 into a system under a deep vacuum could cause what to happen unless necessary precautions are taken?
- (A) rupture disk to rupture
 - (B) air and moisture to enter the receiver
 - (C) system secondary refrigerant to freeze
 - (D) the purge unit to operate

If choice C is selected set score to 1.

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Legend

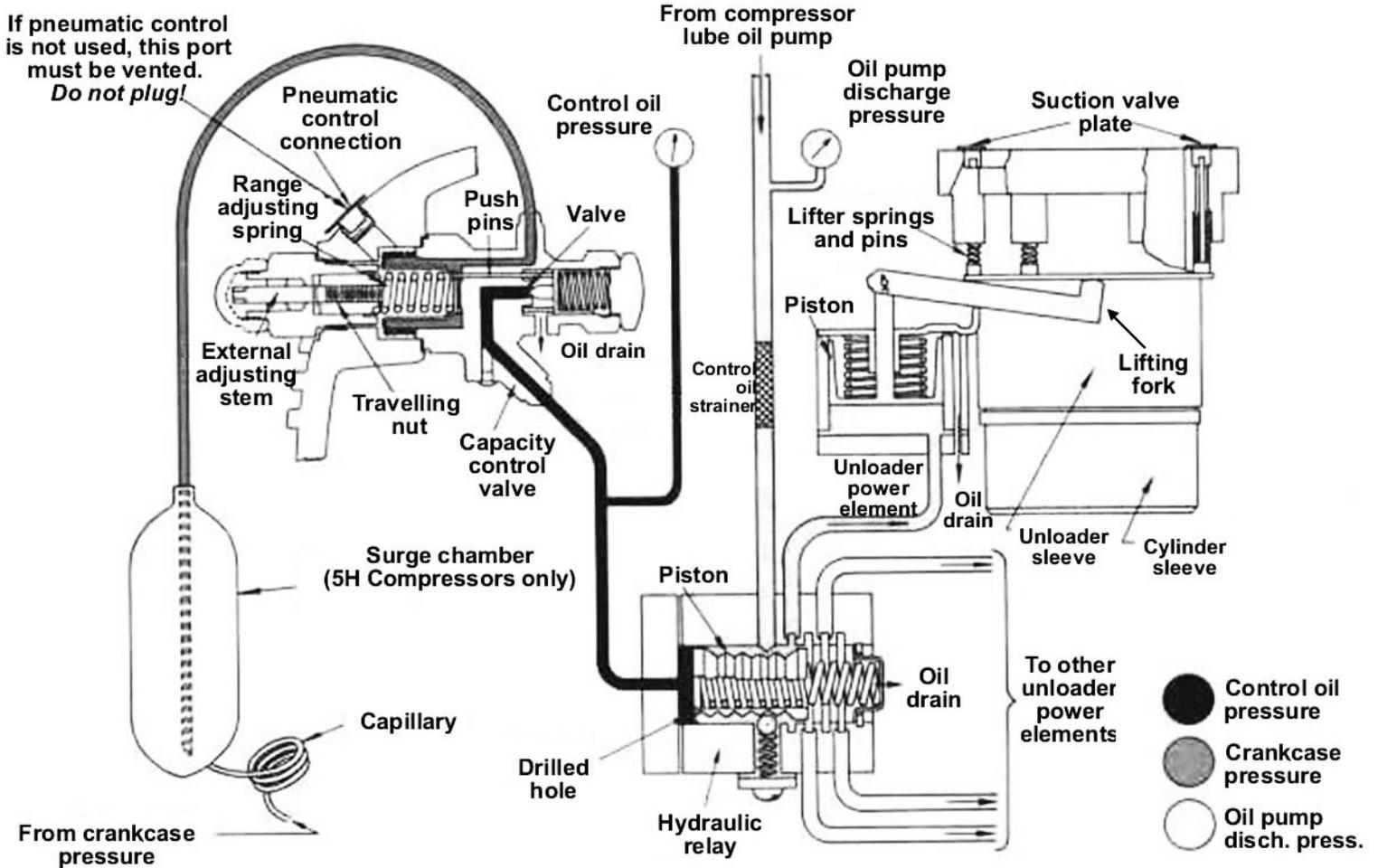
H Humidistat	T Room thermostat
F Fan	M Dual duct air mixing unit
F Filter	 Pneumatic damper & motor
C Cooling coil	M Master
P Preheater (steam)	SM Sub-master
R Reheater (W=water, S=steam)	P Positive positioning relay
T Duct thermostat	 Pneumatic control valve
N.O. Normally open (valve or damper)	D Diverting relay
N.C. Normally closed (valve or damper)	B.P. Minimum outside air bypass

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Capacity Control System

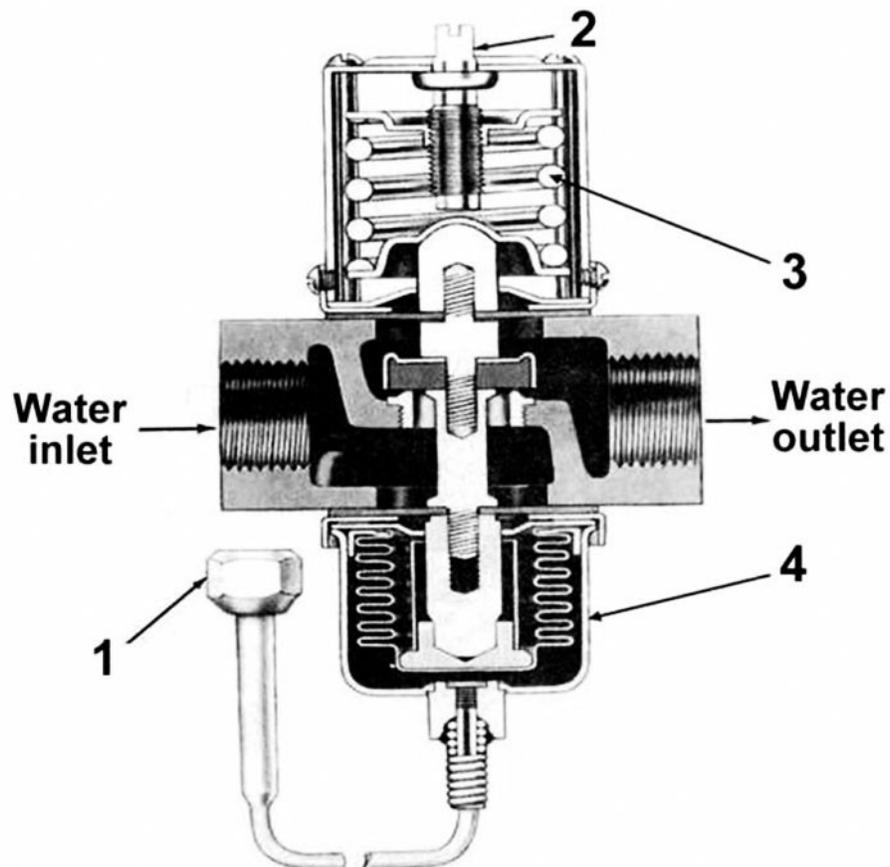


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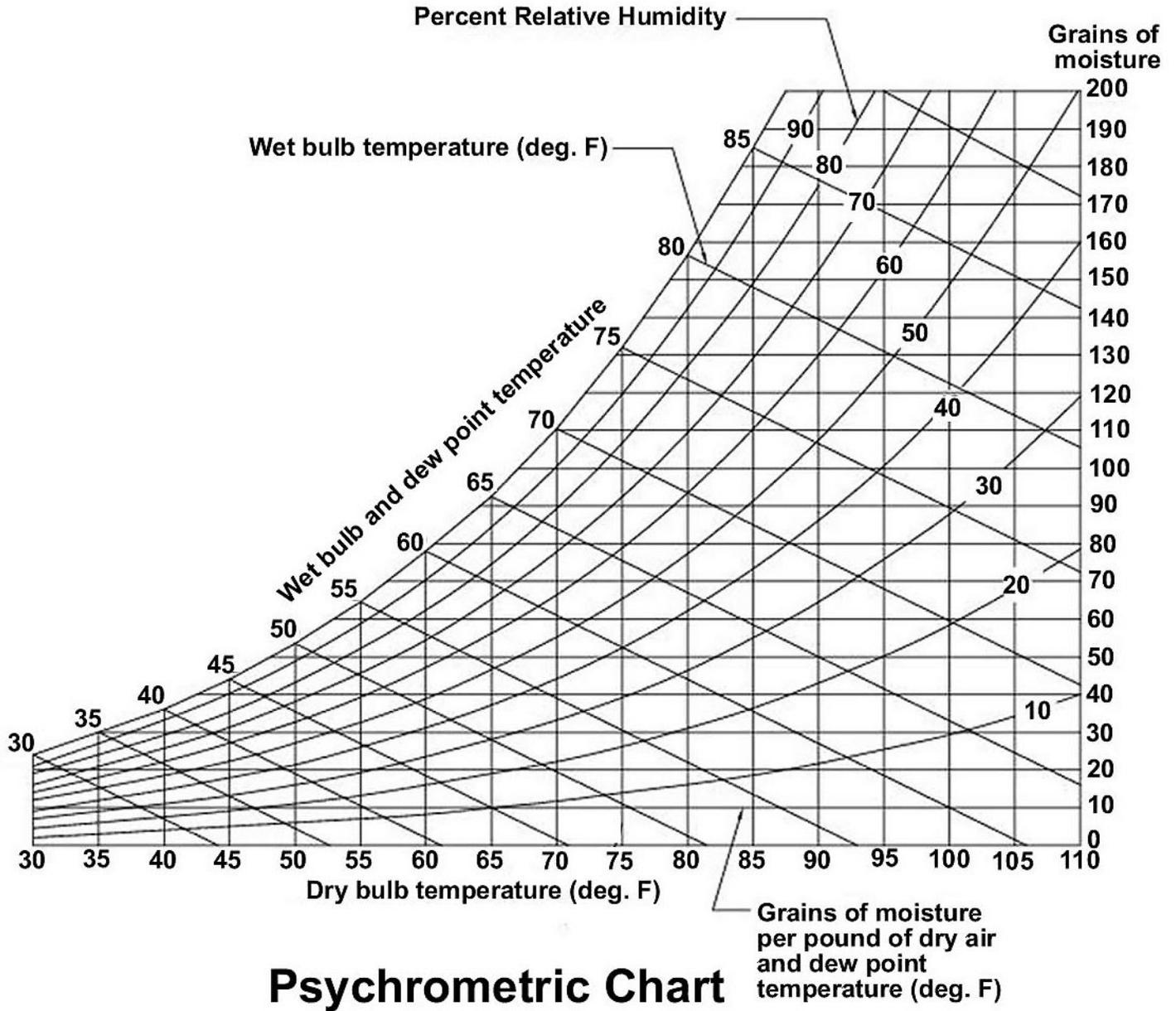
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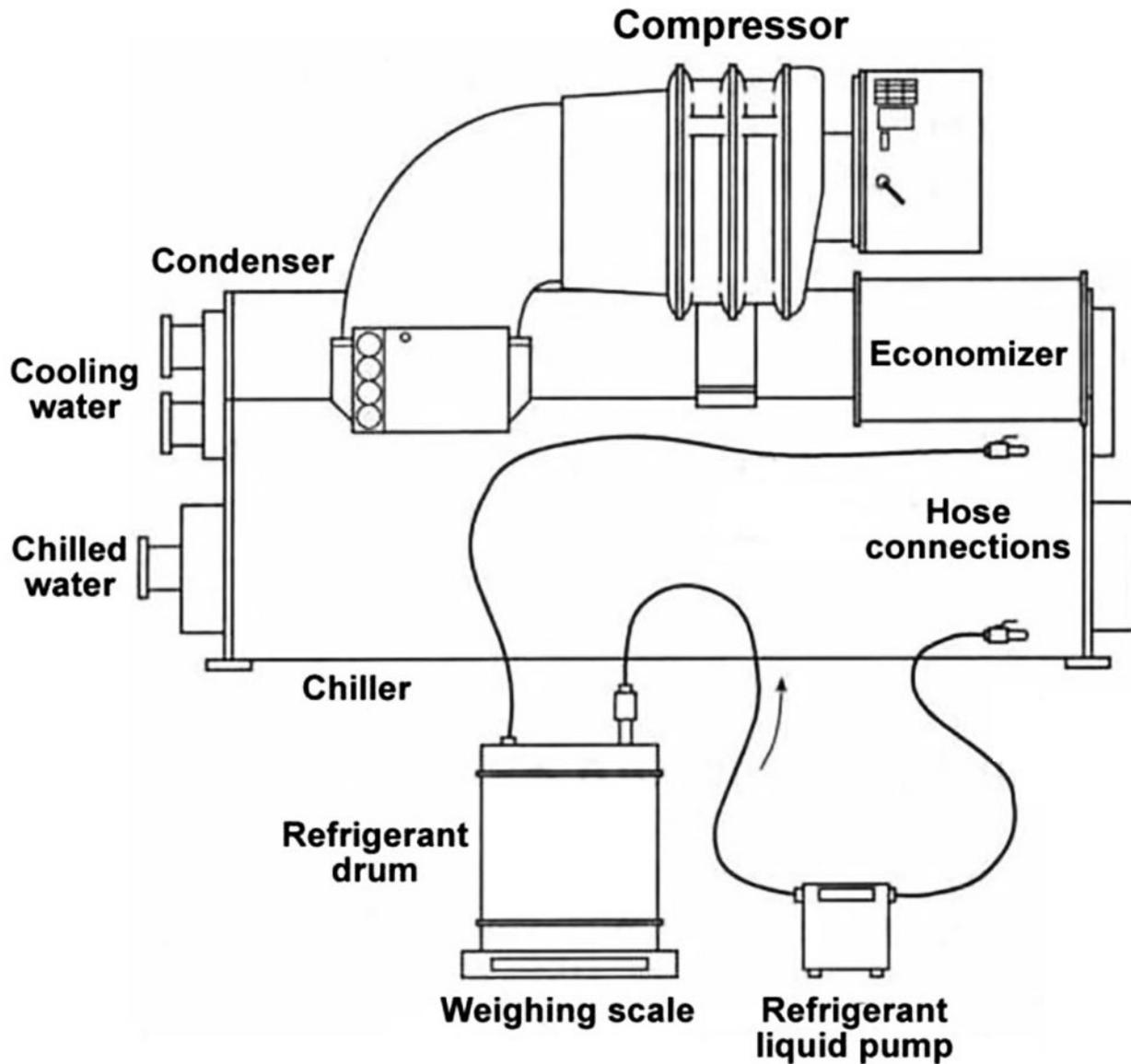
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