

U.S.C.G. Merchant Marine Exam

UFIV-Assistant Engineer

Q692 Engineering Safety-Environmental Protection

(Sample Examination)

Choose the best answer to the following Multiple Choice Questions

1. An acceptable method of temporarily sealing a crack formed in the hull of a vessel is to _____.

- (A) drill holes at each end
- (B) shore up the crack with welded braces
- (C) tack weld a doubler plate over the crack
- (D) apply a patch of sheet packing backed by a strong back or shoring

If choice D is selected set score to 1.

2. The highest concentration of a harmful substance to which a person may be exposed without danger to health, is termed the _____.

- (A) vapor pressure
- (B) tolerance point
- (C) threshold limit value
- (D) odor threshold

If choice C is selected set score to 1.

3. When personnel are lifted by a helicopter from an inflatable life raft, the personnel on the raft should _____.

- (A) deflate the floor of the raft to reduce the danger of capsizing
- (B) inflate the floor of the raft to provide for additional stability
- (C) remove their life jackets to prepare for the transfer
- (D) take in the sea anchor to prevent fouling of the rescue sling

If choice A is selected set score to 1.

4. A hand portable CO₂ fire extinguisher is effective on burning oil only _____.

- (A) if applied in connection with foam
- (B) to prevent rekindling
- (C) if applied promptly
- (D) if attempts to extinguish the fire with low velocity fog have failed

If choice C is selected set score to 1.

5. If deck cargo is carried, it should be stowed so that it _____.

- (A) will cover less than 25 percent of deck space
- (B) does not block access to the fire station hydrant
- (C) will be easily visible from the bridge
- (D) is not higher than 12 inches above the deck

If choice B is selected set score to 1.

6. The most likely location for a liquid cargo fire to occur on a tanker would be _____.

- (A) in the amidships house
- (B) at the main deck manifold
- (C) at the vent header
- (D) in the pump room

If choice D is selected set score to 1.

7. Who is responsible for lowering the survival craft?

- (A) Roustabout
- (B) First man aboard
- (C) Last man aboard
- (D) Helmsman

If choice D is selected set score to 1.

8. Which of the following statements is true concerning an immersion suit and its use?

- (A) Only a light layer of clothing may be worn underneath.
- (B) They provide sufficient flotation to do away with the necessity of wearing a life jacket.
- (C) They should be tight fitting.
- (D) A tear in the suit will not appreciably reduce its value.

If choice B is selected set score to 1.

9. Stability is determined principally by the relationship of the center of gravity and the _____.

- (A) keel
- (B) center of buoyancy
- (C) center of flotation
- (D) aft perpendicular

If choice B is selected set score to 1.

10. To operate a carbon dioxide extinguisher having the type of head shown in the illustration, you would _____ . Illustration SF-0008

- (A) open valve and pull pin
- (B) pull pin and open valve
- (C) pull pin, open valve, and pull up on release lever
- (D) open valve, pull pin, and pull up on release lever

If choice B is selected set score to 1.

11. Following a grounding, you can best determine that a SLACK fuel oil tank has been holed by _____.

- (A) sounding the tank
- (B) waiting for the vessel to list
- (C) examining tank boundaries
- (D) checking fuel oil strainers

If choice A is selected set score to 1.

12. Which of the methods shown in the illustration is the correct way to fit shoring? Illustration SF-0016

- (A) A
- (B) B
- (C) C
- (D) D

If choice A is selected set score to 1.

13. Fire hoses located at protected fire stations must always be _____.

- (A) open to the air to prevent rot
- (B) supplied with a smooth bore nozzle
- (C) capped on the ends for protection
- (D) connected to the fire hydrant

If choice D is selected set score to 1.

14. In heavy seas the helmsman should steer the survival craft _____.

- (A) into the seas
- (B) broadside to the seas
- (C) in the same direction as the seas
- (D) in a series of figure-eights

If choice A is selected set score to 1.

15. The amount of garbage disposed must be entered into the records maintained by each ship and stated in _____.

- (A) barrels, measured in 55 gallon drums
- (B) weight in either kilogram or pounds
- (C) cubic yards convertible to long tons
- (D) cubic meters

If choice D is selected set score to 1.

16. In accordance with 33 CFR Subchapter O (Pollution), each operation involving the transfer of oil or oily mixture that requires an entry in the Oil Record Book shall be fully recorded _____.

- (A) without delay
- (B) within 12 hours of completion of the operation
- (C) within 24 hours of completion of the project
- (D) within 48 hours of completion of the operation

If choice A is selected set score to 1.

17. When checking the level of a volatile liquid in a tank on the weather deck of a tank vessel, you should position yourself _____.

- (A) on the windward side of the opening
- (B) on the leeward side of the opening
- (C) at a right angle to the wind direction
- (D) so that the obstruction of your body will protect you from the fumes

If choice C is selected set score to 1.

18. A large fire has developed in the HFO centrifuge room accessed by door "E". To combat the fire you should _____. Illustration SF-0013

- (A) only need to set up a hose team to cool the door, then open the door and extinguish the fire using a type B-II extinguisher
- (B) advance the hose team into the room without any additional preparatory action
- (C) cool adjoining horizontal and vertical surfaces before opening the door to extinguish the fire
- (D) keep the door tightly closed until all the oil has been consumed by the fire

If choice C is selected set score to 1.

19. By definition, an example of a flammable liquid is _____.

- (A) animal and vegetable oils
- (B) caustic potash
- (C) kerosene
- (D) gasoline

If choice D is selected set score to 1.

20. The advantage of using a dry chemical fire extinguishing agent is _____.

- (A) its good stability and non-toxicity
- (B) its excellent cooling ability
- (C) permanent extinguishment regardless of the re-ignition sources
- (D) all of the above

If choice A is selected set score to 1.

21. The painter on a rigid life raft must have a length sufficient to reach the highest waterline plus an additional _____.

- (A) 5 meters (16 feet)
- (B) 10 meters (31 feet)
- (C) 15 meters (50 feet)
- (D) 20 meters (66 feet)

If choice D is selected set score to 1.

22. Small oil spills on deck can be prevented from contaminating any waters by _____.

- (A) plugging all scuppers and drains
- (B) regularly emptying all drip pans
- (C) thoroughly draining all bunkering hoses
- (D) placing floating booms around the ship

If choice A is selected set score to 1.

23. Manufacturers of self-contained breathing apparatus use color-coded face pieces to indicate different sizes. Which of the following statements is true concerning the colors of SCBA face pieces?

- (A) Size "Small" is green.
- (B) Size "Large" (standard) is black.
- (C) Size "Extra Large" is red.
- (D) All of the above.

If choice D is selected set score to 1.

24. The blocking open or absence of fire dampers can contribute to _____.

- (A) the accumulation of explosive gases
- (B) faster cooling of the fire
- (C) the fire spreading by way of the ventilation system
- (D) fixed foam systems to be ineffective

If choice C is selected set score to 1.

25. When required to work in an area where explosive gases may accumulate, you should use hand tools which are _____.

- (A) high carbon steel
- (B) approved by the Coast Guard
- (C) fixed with a ferrous cover
- (D) non-ferrous

If choice D is selected set score to 1.

26. In firefighting, the term "protecting exposures" means _____.

- (A) protecting exposed areas of the superstructure from flames
- (B) keeping flames from burning at the tank vents
- (C) protecting firefighters from direct exposure to the heat of the fire
- (D) taking measures to prevent the spread of fire from the involved compartment to an adjacent compartment

If choice D is selected set score to 1.

27. If flammable vapors have penetrated a gas free space, which of the following actions would be the most hazardous to perform?

- (A) Opening switches in the space to de-energize circuits.
- (B) Closing switches adjacent to the space to operate vent fans.
- (C) Leaving electrical circuits energized in the space.
- (D) Securing all power to the space from a remote location.

If choice A is selected set score to 1.

28. Which of the following limitations is correct regarding gas or filter masks?

- (A) A maximum of only 30 minutes of protection is afforded with a single canister when in atmospheres containing highly toxic gases.
- (B) All canisters must be discarded within 24 hours when the seal becomes broken.
- (C) A canister is reliable for up to 5 years from the date of manufacture, as long as the seal is unbroken.
- (D) All of the above.

If choice C is selected set score to 1.

29. Life jackets should be stowed in _____.

- (A) the forepeaks
- (B) the pump room
- (C) readily accessible spaces
- (D) locked watertight containers

If choice C is selected set score to 1.

30. Which of the fire extinguishing agents listed can be used to effectively combat a class "B" fire?

- (A) Dry chemical
- (B) Foam
- (C) CO₂
- (D) All of the above

If choice D is selected set score to 1.

31. To prevent oily rags from spontaneously igniting they should be _____.

- (A) kept in the paint locker
- (B) kept in nonmetal containers
- (C) cleaned thoroughly for reuse
- (D) discarded as soon as possible

If choice D is selected set score to 1.

32. If additional weight is placed on the main deck of the vessel shown in the illustration _____.
Illustration SF-0023

- (A) KB will go down
- (B) GM will increase
- (C) G will rise
- (D) K will rise

If choice C is selected set score to 1.

33. The upper explosive limit (UEL) of a mixture of flammable vapors and air is defined as _____.

- (A) that concentration above which there is just enough flammable vapor to produce an explosion
- (B) that concentration above which the mixture is too rich to burn
- (C) the percentage of flammable vapor by volume in air sufficient to create an explosion
- (D) the percentage of oxygen present in the air sufficient to support combustion

If choice B is selected set score to 1.

34. Which of the conditions listed is necessary for a substance to burn?

- (A) The mixture of vapors with air must be between the LEL and the UEL.
- (B) The air must contain oxygen in sufficient quantity.
- (C) The temperature of the substance must be equal to or above its fire point.
- (D) All of the above.

If choice D is selected set score to 1.

35. Which of the following statements is true regarding oxygen indicators?

- (A) The instrument is capable of providing an immediate accurate reading of any space with no delay.
- (B) Prolonged exposure to gases such as CO₂ may affect the accuracy of the indicator.
- (C) A cotton filter placed in the end of the sampling tube prevents damaging the instrument when exposed to strongly acidic gases.
- (D) All of the above.

If choice B is selected set score to 1.

36. When combating a major electrical fire at sea, the main consideration is _____.

- (A) preventing salt water damage to electrical equipment
- (B) reducing the possibility of electrical shock to personnel
- (C) preventing a total loss of electrical power
- (D) eliminating the toxic fumes from burning insulation

If choice B is selected set score to 1.

37. Which of the following is required to be included in the fireman's (emergency) outfit?

- (A) Chemical protection face shield
- (B) Approved work vest
- (C) Self-contained breathing apparatus
- (D) 5 cell approved flashlight

If choice C is selected set score to 1.

38. When fighting a shipboard fire, crew members securing doorways, hatches, and applying cooling water to adjacent decks and bulkheads, while monitoring the spread of heat and smoke, are setting a _____.

- (A) safety perimeter
- (B) cooling zone
- (C) fire boundary
- (D) buffer zone

If choice C is selected set score to 1.

39. A class "D" fire would involve the burning of _____.

- (A) diesel oil
- (B) dunnage
- (C) electrical insulation
- (D) magnesium

If choice D is selected set score to 1.

40. The vapors given off by heated fuel oil are flammable, explosive, and _____.

- (A) lighter than air
- (B) heavier than air
- (C) non-toxic
- (D) odorless

If choice B is selected set score to 1.

41. Clogged limber holes can endanger a ship's stability by _____.

- (A) increasing water area on the keelson
- (B) preventing water from draining to the bilge well
- (C) decreasing off-center weight
- (D) preventing the free surface effect

If choice B is selected set score to 1.

42. Bunker "C" is classified as a grade _____.

- (A) "A" liquid
- (B) "B" liquid
- (C) "E" liquid
- (D) "D" liquid

If choice C is selected set score to 1.

43. Victual waste is _____.

- (A) the final waste product of a manufacturing process
- (B) the resultant sludge that is collected after water washing a boiler
- (C) the final discharge of sewage treatment plants
- (D) any garbage that comes from food or food provisions

If choice D is selected set score to 1.

44. When amendments are made to the shipboard oil pollution emergency plan, all revisions must be submitted to the Coast Guard _____.

- (A) six months prior to the end of the approval period
- (B) one month prior to the anniversary date of the plan
- (C) and can be implemented without immediate approval as long as final approval is received within six months of submittal
- (D) and cannot be implemented without approval

If choice D is selected set score to 1.

45. Which of the listed characteristics applies to a semi-portable CO₂ system?

- (A) Each cylinder must weigh less than 50 pounds.
- (B) It has a portable hose and nozzle.
- (C) The cylinders are mounted horizontally.
- (D) It has distribution piping installed permanently.

If choice B is selected set score to 1.

46. When the cotton cover of a fire hose becomes oily or greasy, it should be washed with a solution of mild soapy fresh water and _____.

- (A) a soft-bristled brush
- (B) paint thinner
- (C) a wire brush
- (D) cornstarch

If choice A is selected set score to 1.

47. The most effective method of extinguishing a class "A" fire is by _____.

- (A) quenching and cooling
- (B) using non-conducting extinguishers
- (C) blanketing and smothering
- (D) using a sodium based dry chemical

If choice A is selected set score to 1.

48. If you see an individual fall overboard, you should _____.

- (A) throw a life ring overboard
- (B) hail "Man Overboard"
- (C) pass the word to the bridge
- (D) all of the above

If choice D is selected set score to 1.

49. Paints and solvents used aboard a vessel should be _____.

- (A) drained into a common container after each use
- (B) returned to the paint locker after each use
- (C) stowed safely at the work site until work is completed
- (D) covered with a fine mesh screen to protect from ignition sources

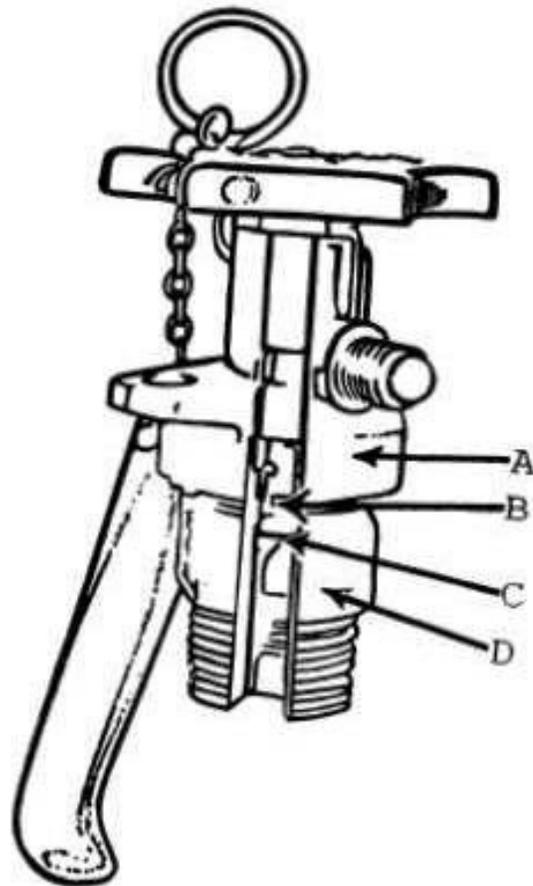
If choice B is selected set score to 1.

50. The airborne concentrations of substances (such as hydrogen sulfide) under which nearly all workers may be repeatedly exposed without adverse effects are called _____.

- (A) exposure limits
- (B) concentration limits
- (C) threshold limit values
- (D) substance limit values

If choice C is selected set score to 1.

SF-0008



Adapted for testing purposes only from Fire Fighting Manual for Tank Vessels
CG-329

SF-0013

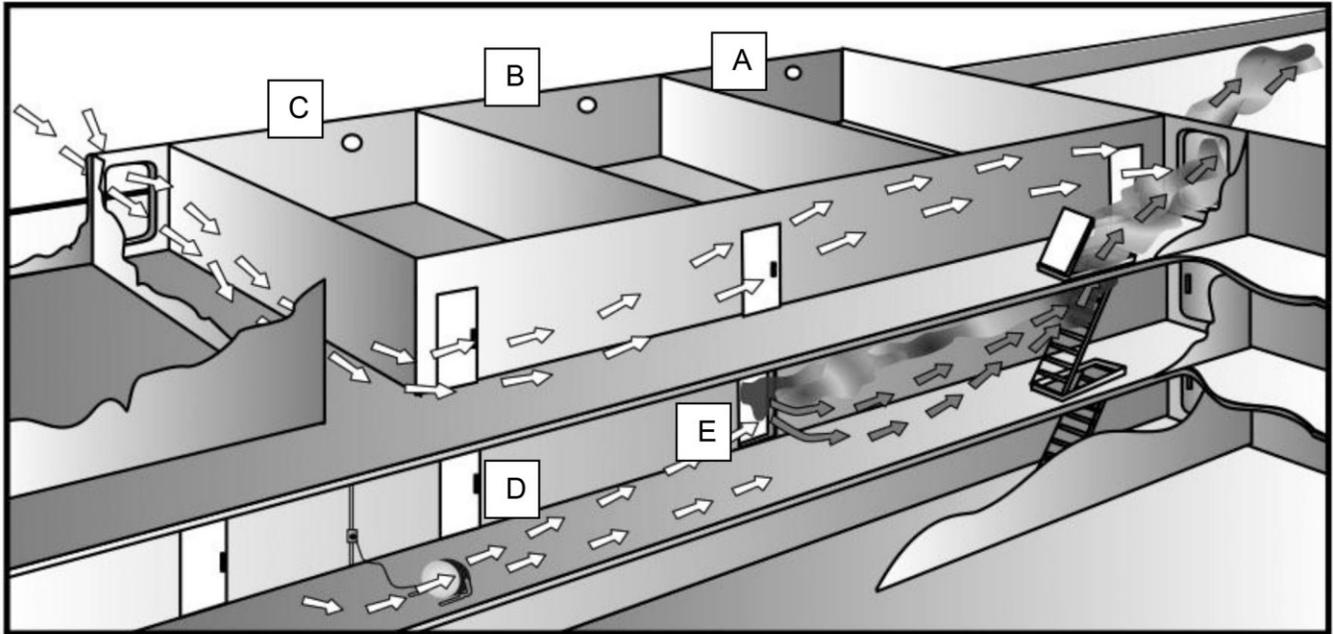


Figure 1

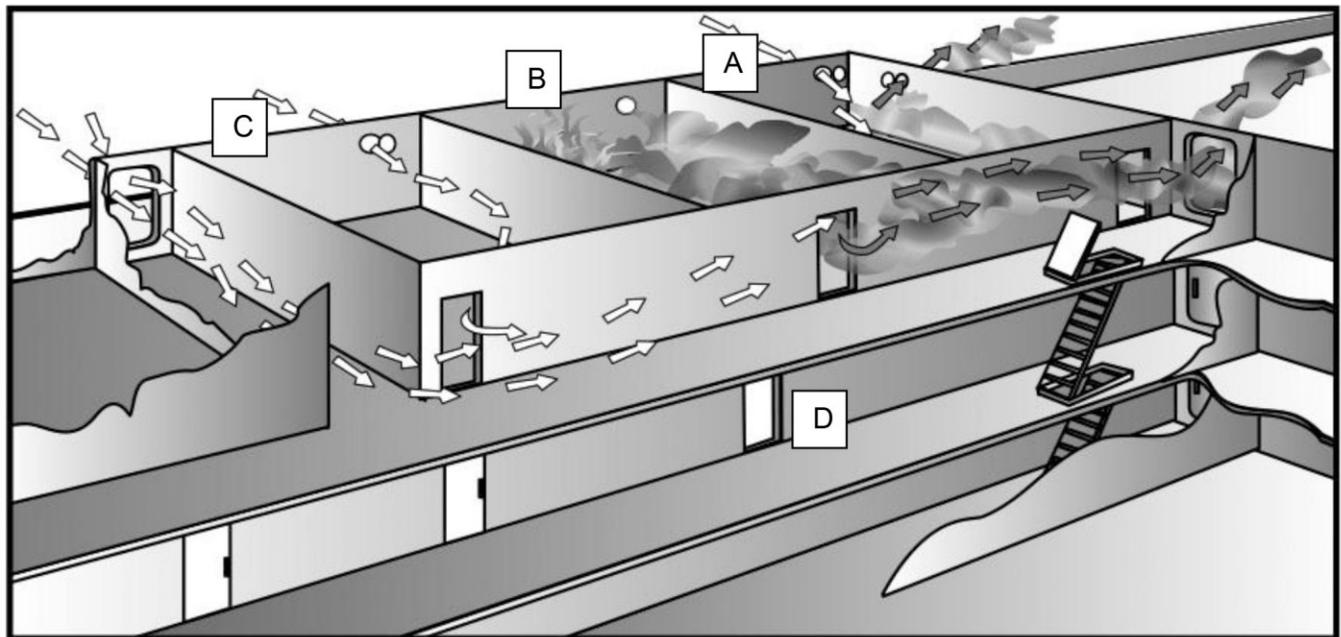
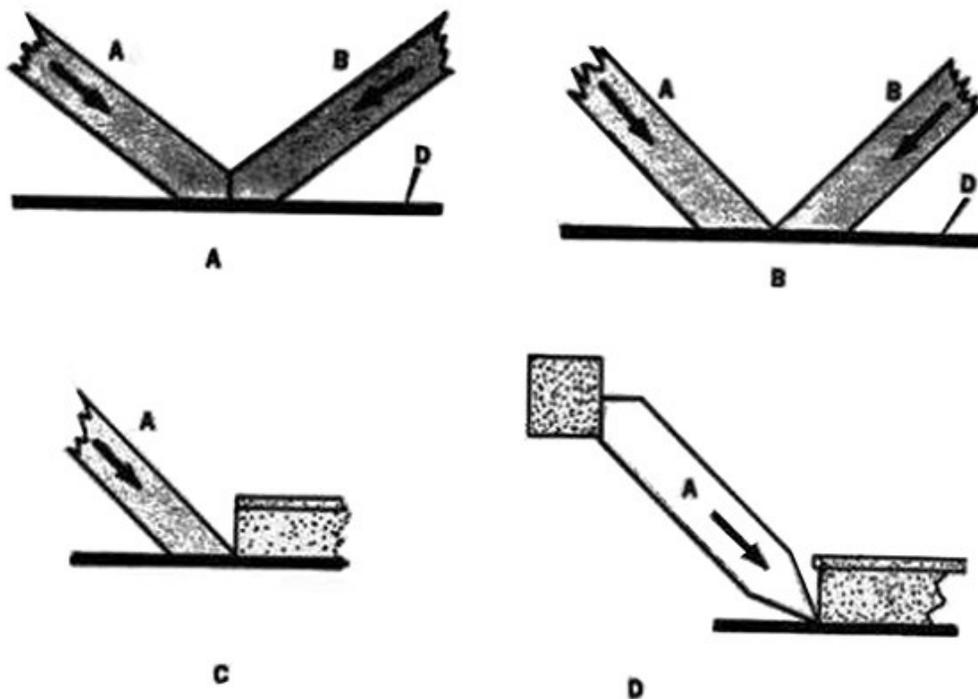


Figure 2

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U.S. Department of Transportation Maritime Administration

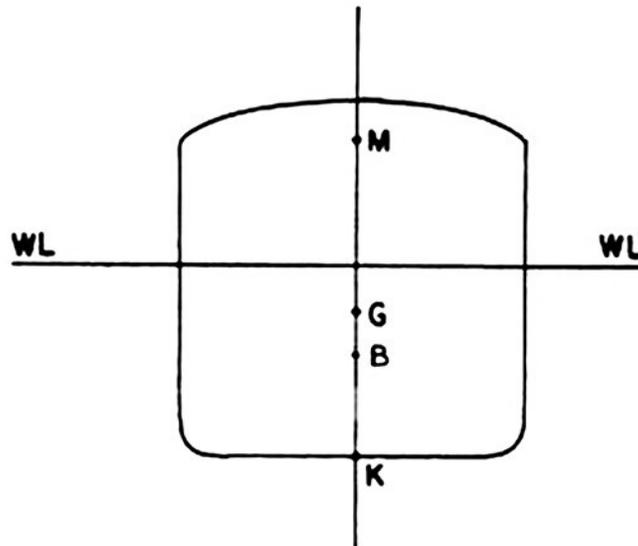
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SF-0016



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NAVEDTRA 16191

SF-0023



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