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. Wooden shoring, with a cross-sectional dimension of 4" X 4" should not be longer than __________.
   - (A) 8 feet
   - (B) 10 feet
   - (C) 16 feet
   - (D) 20 feet

   *If choice B is selected set score to 1.*

2. Following a grounding, you can best determine that a SLACK fuel oil tank has been holed by __________.
   - (A) examining tank boundaries
   - (B) sounding the tank
   - (C) waiting for the vessel to list
   - (D) checking fuel oil strainers

   *If choice B is selected set score to 1.*

3. An acceptable method of temporarily sealing a crack formed in the hull of a vessel is to __________.
   - (A) drill holes at each end
   - (B) apply a patch of sheet packing backed by a strongback or shoring
   - (C) shore up the crack with welded braces
   - (D) tack weld a doubler plate over the crack

   *If choice B is selected set score to 1.*

4. The bypass valve on a self-contained breathing apparatus (SCBA) bypasses __________.
   - (A) the regulator in an emergency
   - (B) the regenerator in an emergency
   - (C) a breathing bag containing excessive pressure
   - (D) oxygen to the atmosphere

   *If choice A is selected set score to 1.*

5. 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.*
6. In accordance with 46 CFR, life jackets should be stowed in __________.
   - (A) the forepeaks
   - (B) the pumproom
   - (C) readily accessible spaces
   - (D) locked watertight containers

   *If choice C is selected set score to 1.*

7. The external flotation bladder on an immersion suit should be inflated __________.
   - (A) before you enter the water
   - (B) after you enter the water
   - (C) after one hour in the water
   - (D) after you notice that your suit is losing buoyancy

   *If choice B is selected set score to 1.*

8. When the survival craft is supplied with bottles of compressed air, they are used for __________.
   - (A) personnel air supply
   - (B) additional flotation
   - (C) priming the sprinkler system
   - (D) filling the self-righting bags

   *If choice A is selected set score to 1.*

9. 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.*

10. 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.*
11. 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.*

12. Except in rare cases, it is impossible to extinguish a shipboard fire by __________.
   - (A) removing the fuel
   - (B) removing the heat
   - (C) interrupting the chain reaction
   - (D) removing the oxygen

   *If choice A is selected set score to 1.*

13. All of the following are part of the fire triangle EXCEPT __________.
   - (A) fuel
   - (B) oxygen
   - (C) heat
   - (D) electricity

   *If choice D is selected set score to 1.*

14. Which of the gases listed is the poisonous gas most likely to be found in a closed compartment involved in a fire?
   - (A) Nitrogen
   - (B) Hydrogen
   - (C) Carbon dioxide
   - (D) Carbon monoxide

   *If choice D is selected set score to 1.*

15. The process that occurs when heat is generated by a chemical reaction within a substance and continues to a point of ignition is known as __________.
   - (A) radiation ignition
   - (B) chemical ignition
   - (C) spontaneous combustion
   - (D) chemical combustion

   *If choice C is selected set score to 1.*
16. When combating a class "C" fire, which of the following dangers may be present?

- (A) Increased surface area of the burning fluid
- (B) Water damage to machinery not involved in the fire
- (C) Flooding of the vessel
- (D) Toxic fumes from burning insulation or electric shock

*If choice D is selected set score to 1.*

17. A fire in a pile of dunnage would be classified as a __________.

- (A) class "A"
- (B) class "B"
- (C) class "C"
- (D) class "D"

*If choice A is selected set score to 1.*

18. Paints and solvents used aboard a vessel should be __________.

- (A) returned to the paint locker after each use
- (B) drained into a common container 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 A is selected set score to 1.*

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

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

*If choice A is selected set score to 1.*

20. Good housekeeping on a vessel prevents fires by __________.

- (A) allowing better access in an emergency
- (B) eliminating potential fuel sources
- (C) eliminating trip hazards
- (D) improving personnel qualifications

*If choice B is selected set score to 1.*
21. When using foam, a "Class B" fire is extinguished by __________.
   
   o (A) replacing the fuel
   • (B) smothering the fire
   • (C) cooling the surface
   o (D) all of the above

   If choice B is selected set score to 1.

22. Which of the following statements is true concerning Halon 1301 fire extinguishing equipment?
   
   o (A) The agent is highly toxic at normal room temperature.
   o (B) The agent cannot be used on electrical fires because it leaves a residue.
   • (C) For portable extinguishers, the agent is only available in a 2-pound unit.
   o (D) Halon extinguishes the fire by smothering action.

   If choice C is selected set score to 1.

23. Which of the following statements is true concerning the fire extinguisher shown in the illustration?

   Illustration SF-0006
   
   o (A) The illustrated extinguisher must never be used in conjunction with water.
   • (B) The agent may be applied in short bursts by opening and closing the squeeze nozzle
   o (C) There is no danger of reflash in using the illustrated extinguisher on a class "B" fire.
   o (D) The initial discharge of the extinguisher should be at close range to scatter the burning material.

   If choice B is selected set score to 1.

24. 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 __________.
   
   o (A) paint thinner
   • (B) a soft-bristled brush
   o (C) a wire brush
   o (D) cornstarch

   If choice B is selected set score to 1.

25. A high velocity fog nozzle will produce the most effective spray pattern when the water pressure is not less than __________.
   
   o (A) 35 psi (241.3 kPa)
   o (B) 60 psi (413.6 kPa)
   o (C) 75 psi (517.0 kPa)
   • (D) 100 psi (689.4 kPa)

   If choice D is selected set score to 1.
26. Which of the listed characteristics applies to a semi-portable CO₂ system?
   - (A) The cylinders are mounted horizontally.
   - (B) It has distribution piping installed permanently.
   - (C) Each cylinder must weigh less than 50 pounds.
   - (D) It has a portable hose and nozzle.

   *If choice D is selected set score to 1.*

27. During cargo operations, a deck fire has occurred due to a leaking cargo line. You should FIRST __________.
   - (A) prevent the spread of fire with a foam dam
   - (B) stop the transfer of cargo
   - (C) apply CO₂ on the burning fuel at its source
   - (D) blanket the cargo spill with foam

   *If choice B is selected set score to 1.*

28. When approaching a fire from windward, you should shield firefighters from the fire by using an applicator and __________.
   - (A) high-velocity fog
   - (B) low-velocity fog
   - (C) foam spray
   - (D) a straight stream of water

   *If choice B is selected set score to 1.*

29. In firefighting, the term “protecting exposures” means __________.
   - (A) protecting firefighters from direct exposure to the heat of the fire
   - (B) taking measures to prevent the spread of fire from the involved compartment to an adjacent compartment
   - (C) keeping flames from burning at the tank vents
   - (D) protecting exposed areas of the superstructure from flames

   *If choice B is selected set score to 1.*

30. If deck cargo is carried, it should be stowed so that it __________.
   - (A) will be easily visible from the bridge
   - (B) will cover less than 25 percent of deck space
   - (C) does not block access to the fire station hydrant
   - (D) is not higher than 12 inches above the deck

   *If choice C is selected set score to 1.*
31. The longer an oil fire is permitted to burn, the __________.
   • (A) easier it is to control
   • (B) less chance there is of reignition
   • (C) easier it is to extinguish
   • (D) harder it is to extinguish

   If choice D is selected set score to 1.

32. 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.

33. 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.

34. An oxygen indicator will detect __________.

   • (A) concentrations of explosive gas
   • (B) an oxygen deficiency in a space
   • (C) the presence of harmful amounts of carbon monoxide
   • (D) all of the above

   If choice B is selected set score to 1.

35. 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.
36. Which of the following conditions is true concerning flammable liquid vapors with a concentration above the upper explosive limit?

- (A) The vapor is about to explode.
- (B) The mixture is too lean to burn.
- (C) The mixture is too rich to burn.
- (D) Conditions are perfect for combustion.

If choice C is selected set score to 1.

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

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

If choice D is selected set score to 1.

38. Which of the petroleum products listed has a flash point below 150°F?

- (A) Asphalt
- (B) Lubricating oils
- (C) Road oils
- (D) Light fuel oils

If choice D is selected set score to 1.

39. 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.

40. Which of the following hazards is associated with the handling of petroleum products?

- (A) Fire
- (B) Asphyxiation
- (C) Explosion
- (D) All of the above

If choice D is selected set score to 1.
41. 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.*

42. According to 33 CFR Subchapter O (Pollution), an oceangoing ship of over 400 gross tons must be fitted with a standard discharge shore connection. What size bolt circle diameter is required for this shore connection to transfer oily ballast to a shoreside reception facility?
   - (A) 125 mm
   - (B) 183 mm
   - (C) 215 mm
   - (D) 250 mm

   *If choice B is selected set score to 1.*

43. In cleaning up an oil spill, the use of straw or reclaimed paper fibers would be an example of which type of oil removal?
   - (A) Mechanical removal
   - (B) Chemical agent removal
   - (C) Absorbent removal
   - (D) None of the above

   *If choice C is selected set score to 1.*

44. In accordance with 33 CFR Subchapter O (Pollution), which of the following is a mandatory section of the shipboard oil pollution emergency plan?
   - (A) list of individuals required to respond
   - (B) plan exercises
   - (C) removal equipment list
   - (D) reporting requirements

   *If choice D is selected set score to 1.*

45. 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.*
46. In accordance with 33 CFR Subchapter O (Pollution), the Oil Record Book for all U.S. ships ________.
   o (A) is to be kept in the personal possession of the master
   o (B) should not be used to record the accidental discharge of oil or oily mixtures
   o (C) is required to have entries recorded within 48 hours of completion of the particular operation
   • (D) is the property of the U.S. government

   If choice D is selected set score to 1.

47. Which extinguishing agent is the best for use on electrical fires?
   o (A) Dry chemical
   o (B) Water fog
   o (C) Foam
   • (D) CO₂

   If choice D is selected set score to 1.

48. Reserve buoyancy is the __________.
   • (A) volume of intact space above the waterline
   o (B) unoccupied space below the waterline
   o (C) difference between buoyancy in salt and fresh waters
   o (D) excess of the buoyant force over gravitational force

   If choice A is selected set score to 1.

49. The ability of a vessel to remain in a stable position is controlled by the interaction of two opposing forces, __________.
   • (A) gravity and buoyancy
   o (B) gravity and transverse metacenter
   o (C) stiff and tender
   o (D) metacentric radius and buoyancy

   If choice A is selected set score to 1.

50. Stability is determined principally by the relationship of the center of gravity and the __________.
   o (A) keel
   • (B) center of buoyancy
   o (C) center of flotation
   o (D) aft perpendicular

   If choice B is selected set score to 1.
Adapted for testing purposes only from Damage Controlman NAVEDTRA 14057
Further reproduction prohibited without permission.