

U.S.C.G. Merchant Marine Exam

DDE-1000/4000 HP

Q633 Engineering Safety-Environmental Protection

(Sample Examination)

Choose the best answer to the following Multiple Choice Questions

1. 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.

2. If an incorrect entry were made in the Oil Record Book, you should _____.

- (A) notify the ship's officer in charge
- (B) draw a single line through the wrong entry and initial it
- (C) erase the entry and rewrite it
- (D) completely black it out and make the correct entry alongside

If choice B is selected set score to 1.

3. With no environmental forces acting on the vessel, the center of gravity of an inclined vessel is vertically aligned with the _____.

- (A) center of flotation
- (B) original vertical centerline
- (C) metacenter
- (D) longitudinal centerline

If choice B is selected set score to 1.

4. The weight of the liquid displaced by a vessel floating in sea water is equal to the _____.

- (A) displaced submerged volume
- (B) weight required to sink the vessel
- (C) total weight of the vessel
- (D) reserve buoyancy

If choice C is selected set score to 1.

5. A flat block placed under the end of a shore for the purpose of distributing pressure is referred to as a _____.

- (A) strong back
- (B) shole
- (C) shore foot
- (D) butt piece

If choice B is selected set score to 1.

6. The wooden plug fitted tightly in the vent of a damaged tank may prevent the tank from _____.
- (A) collapsing
 - (B) developing free surface moments
 - (C) developing free surfaces
 - (D) filling completely

If choice D is selected set score to 1.

7. What standard mathematical formula is commonly used to calculate a vessels waterplane area for stability purposes?
- (A) Reynolds Number Rule
 - (B) Simpsons Rule
 - (C) Pythagorean Rule
 - (D) Standard Logarithmic Rule

If choice B is selected set score to 1.

8. If a vessel rolls to the starboard side, and there are no movable or moving weights onboard, the center of gravity will _____.
- (A) move to starboard
 - (B) move to port
 - (C) move directly down
 - (D) stay in the same position

If choice D is selected set score to 1.

9. In figure 1 of the illustration, fire would spread to compartment "B" by _____. Illustration SF-0013
- (A) convection
 - (B) radiation
 - (C) conduction
 - (D) impingement

If choice C is selected set score to 1.

10. In accordance with 33 CFR Subchapter O, shipboard pollution prevention regulations are enforced by the _____.
- (A) Corps of Engineers
 - (B) U.S. Coast Guard
 - (C) State Pollution Board
 - (D) Port Authority

If choice B is selected set score to 1.

11. 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.

12. 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.

13. 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.

14. When preparing to pump flammable liquids with a centrifugal pump, you should _____.

- (A) draw a small quantity of liquid to prime the pump
- (B) check for gland leakage and any fire hazard
- (C) have a standby pump running with the discharge valve closed
- (D) lift the relief valve by hand to check its operation

If choice B is selected set score to 1.

15. For hydrogen sulfide detection, sensitized tapes indicate the presence of this gas by means of discoloration of an exposed spot on the tape. The shade of the color on the spot depends upon the concentration of the gas and _____.

- (A) air temperature during exposure
- (B) air pressure during exposure
- (C) humidity during exposure
- (D) duration of exposure

If choice D is selected set score to 1.

16. An immersion suit should be equipped with a/an _____.

- (A) air bottle for breathing
- (B) whistle and hand-held flare
- (C) whistle, strobe light, and reflective tape
- (D) whistle, hand-held flare, and sea dye marker

If choice C is selected set score to 1.

17. 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.

18. 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.

19. 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.

20. Which of the components listed are interchangeable between different backpack self-contained breathing apparatus produced by various manufacturers?

- (A) The face piece
- (B) The air cylinder
- (C) The regulator
- (D) All of the above

If choice B is selected set score to 1.

21. During cargo operations, a deck fire has occurred due to a leaking cargo line. You should FIRST _____.

- (A) stop the transfer of cargo
- (B) prevent the spread of fire with a foam dam
- (C) apply CO₂ on the burning fuel at its source
- (D) blanket the cargo spill with foam

If choice A is selected set score to 1.

22. A low velocity fog applicator is retained in an all-purpose nozzle by a bayonet joint. The applicator is prevented from rotating in the joint by _____.

- (A) a locknut
- (B) a keeper screw
- (C) a spring-loaded catch
- (D) water pressure

If choice C is selected set score to 1.

23. When the scuppers are plugged and an oil spill occurs on deck, you should _____.

- (A) remove plugs from scuppers and wash fuel overboard with water
- (B) remove plugs from scuppers to allow the spill to run overboard and wipe the area dry with rags
- (C) remove plugs from scuppers and wash the fuel overboard with a solvent
- (D) use absorbent material, such as sawdust, to clean up the spill

If choice D is selected set score to 1.

24. The reading of a combustible gas indicator indicates the percentage of the _____.

- (A) lower explosive limit of a flammable gas concentration
- (B) upper explosive limit of a flammable gas concentration
- (C) concentration of flammable gas in a compartment
- (D) concentration by weight of nonflammable gas in a compartment

If choice A is selected set score to 1.

25. Recharging a previously used cartridge-operated dry chemical fire extinguisher is accomplished by _____.

- (A) replacing the propellant cartridge and refilling it with powder
- (B) authorized fire equipment servicing personnel only
- (C) recharging the cartridge and refilling it with powder
- (D) puncturing the cartridge seal after installation

If choice A is selected set score to 1.

26. When inspecting a survival craft, you should check to make sure that the _____.

- (A) sea anchor is deployed
- (B) hydraulic starting system has been drained
- (C) hydraulic pressure is within the specified range
- (D) steering controls are locked

If choice C is selected set score to 1.

27. Which extinguishing agent is the best for use on electrical fires?

- (A) Water fog
- (B) Dry chemical
- (C) Foam
- (D) CO₂

If choice D is selected set score to 1.

28. The purpose of the wire stretched between the lifeboat davit heads is to _____.

- (A) keep the movement of the davits at the same speed
- (B) keep the davits from slipping when they are in the stowed position
- (C) prevent vibration during lowering of the boat
- (D) support the manropes

If choice D is selected set score to 1.

29. When pumping sour crude, which gas should be tested for prior to entering the cargo pump room to repair a leaking pump?

- (A) Benzene
- (B) Carbon monoxide
- (C) Hydrogen sulfide
- (D) Tetraethyl lead

If choice C is selected set score to 1.

- 30.** On a cargo ship equipped with a combination fire detection/carbon dioxide extinguishing system, the presence of fire is indicated at the cabinet simultaneously in two spaces: No.3 hold upper between decks, containing bagged coffee beans; and No.4 lower hold containing fertilizer. To combat these fires you should _____.
- (A) activate the pilot CO₂ cylinders, directing the discharge to No.3 hold, then to No.4 hold through the three-way valve
 - (B) open the applicable three-way valve for No.3 hold and fight the fire in No.4 hold with water
 - (C) open the applicable three-way valve for No.4 hold. After discharge, secure the valve; then open the applicable valve for No.3 hold
 - (D) open the three-way valves to each space simultaneously

If choice C is selected set score to 1.

- 31.** Fire detecting systems on merchant vessels may be arranged to sense _____.
- (A) ionized particles
 - (B) smoke
 - (C) rate of temperature rise
 - (D) all of the above

If choice D is selected set score to 1.

- 32.** After measuring the length to which a section of shoring should be cut, you should cut the shoring _____.
- (A) approximately 1/2 inch shorter per foot of the measured length to allow for wet expansion
 - (B) approximately 1/2 inch shorter than the measured length to allow for the use of wedges
 - (C) approximately 1/2 inch longer than the measured length to allow for trimming
 - (D) to the same length as the measured length

If choice B is selected set score to 1.

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

If choice B is selected set score to 1.

34. You are involved in an emergency landing of a helicopter on the water. You should inflate your life jacket _____.

- (A) upon entering the helicopter
- (B) prior to reaching the water
- (C) after reaching the water, but prior to exiting the helicopter
- (D) after exiting clear of the helicopter

If choice D is selected set score to 1.

35. Which of the listed classes of fire would most likely occur in the engine room of a vessel?

- (A) Classes "A" and "B"
- (B) Classes "B" and "C"
- (C) Classes "C" and "D"
- (D) Classes "A" and "D"

If choice B is selected set score to 1.

36. If emergency welding repairs must be made to the upper area of a fuel tank, the tank and/or adjacent compartments may need to be _____.

- (A) filled with water
- (B) gas freed
- (C) inerted
- (D) all of the above as necessary

If choice D is selected set score to 1.

37. 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.

38. When using foam, a "Class B" fire is extinguished by _____.

- (A) replacing the fuel
- (B) cooling the surface
- (C) smothering the fire
- (D) all of the above

If choice C is selected set score to 1.

39. The worst atmospheric condition for dispersion of hydrogen sulfide is _____.

- (A) gusty winds with rain
- (B) heavy rain
- (C) full sun with high winds
- (D) nearly calm, clear nights or early morning

If choice D is selected set score to 1.

40. The longer an oil fire is permitted to burn, the _____.

- (A) easier it is to extinguish
- (B) less chance there is of re-ignition
- (C) harder it is to extinguish
- (D) easier it is to control

If choice C is selected set score to 1.

41. In accordance with 46 CFR Subchapter I (Cargo and Miscellaneous Vessels), fire main outlet valves or hydrants located on exposed decks shall be _____.

- (A) opened up and internally examined at each Coast Guard biannual inspection for certification
- (B) protected against freezing or be fitted with cutout valves and drain valves
- (C) behind glass or a suitably marked enclosure
- (D) all of the above

If choice B is selected set score to 1.

42. Which of the following statements is true concerning carbon dioxide when used as a fire extinguishing agent?

- (A) Carbon dioxide should be applied slowly to a large engine room fire.
- (B) Its total cooling effect is far greater than water.
- (C) Its smothering effect is excellent for class "B" fires.
- (D) Carbon dioxide is corrosive when exposed to fire.

If choice C is selected set score to 1.

43. In accordance with 33 CFR Subchapter O (Pollution), which of the following is NOT required to be provided as part of the appendixes of the Shipboard Oil Pollution Emergency Plan?

- (A) A list which specifies who will be responsible for informing the parties listed and the priority in which they must be notified.
- (B) A list of personnel duty assignments.
- (C) A list of agencies or officials in regularly visited ports.
- (D) A list of agencies or officials of Coastal State administrations responsible for receiving and processing incident reports.

If choice B is selected set score to 1.

44. Which of the devices listed would be safe to use in a compartment with insufficient oxygen?

- (A) Wet handkerchief.
- (B) Self-contained breathing apparatus.
- (C) Dust or gas mask.
- (D) Canister type mask.

If choice B is selected set score to 1.

45. If the cause of severe list or trim of a vessel is due to off-center ballast, counter-flooding into empty tanks will _____.

- (A) increase list or trim
- (B) increase the righting arm
- (C) increase the righting moment
- (D) decrease list or trim

If choice D is selected set score to 1.

46. To prevent the spread of fire by convection you should _____.

- (A) cool the bulkhead around the fire
- (B) shut off electrical power
- (C) close all openings to the area
- (D) remove combustibles from direct exposure

If choice C is selected set score to 1.

47. Your vessel is taking on bunkers from a shore side facility. If oil begins flowing from one tank vent, which of the following actions should be taken FIRST?

- (A) Close the valve on the tank vent line.
- (B) Set out drip pans and sawdust and begin to mop up the spill.
- (C) Signal the shore control point to shutdown.
- (D) Open the intake valve to an adjacent tank.

If choice C is selected set score to 1.

48. The most important reason for taking anti-seasickness pills as soon as possible after entering a life raft is to _____.

- (A) assist in sleeping
- (B) reduce appetite by decreasing nausea
- (C) prevent loss of body moisture by vomiting
- (D) prevent impaired judgment due to motion-induced deliriousness

If choice C is selected set score to 1.

49. 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.

50. If the chemical material is a mixture, what must the Material Safety Data Sheet (MSDS) identify?

- (A) The name of each hazardous ingredient.
- (B) Other similar mixtures of liquids, solids or gases.
- (C) Paints or coatings that are safe to use with it.
- (D) None of the above.

If choice A is selected set score to 1.

SF-0013

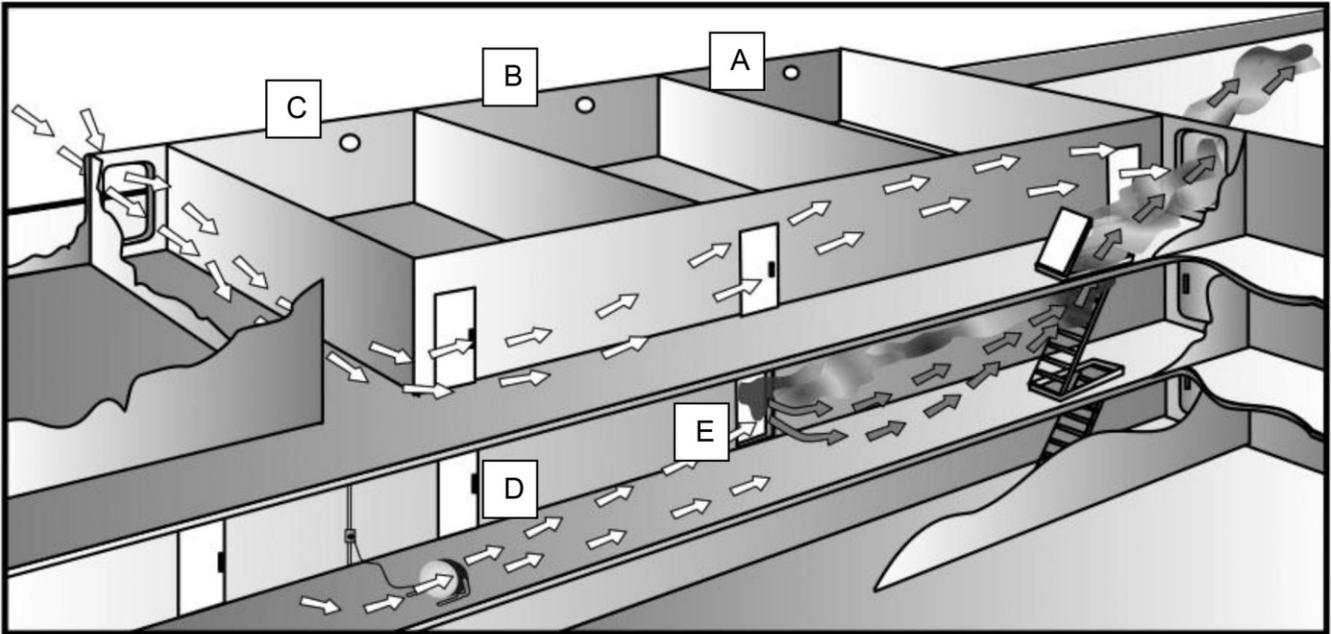


Figure 1

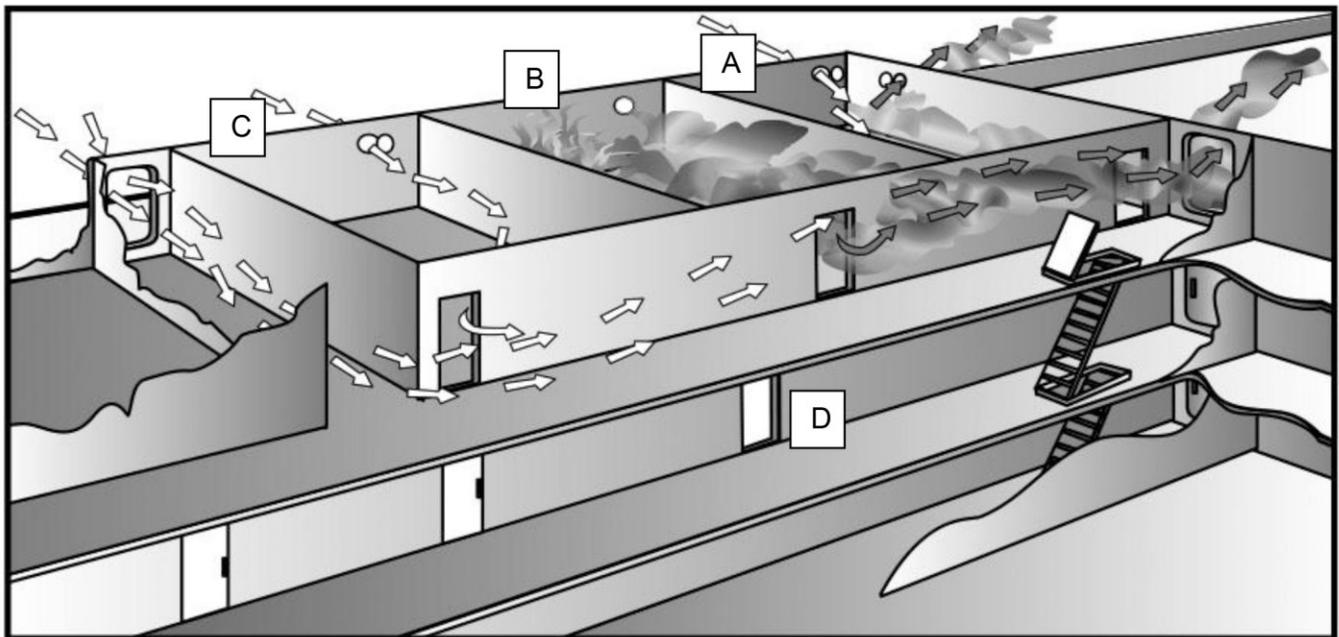


Figure 2

Adapted for testing purposes only from Marine Fire Prevention, Firefighting and Fire Safety
U.S. Department of Transportation Maritime Administration

Further reproduction prohibited without permission