

U.S.C.G. Merchant Marine Exam
Mobile Offshore Drilling Units I
Q433 OIM - Surface Units on Location
(Sample Examination)

Choose the best answer to the following Multiple Choice Questions.

1. Which type of hull damage on a floating MODU should be repaired first?

- (A) Damage at or just above the waterline
- (B) Damage to interior watertight boundaries
- (C) Damage below the waterline
- (D) Damage to/in machinery rooms

If choice A is selected set score to 1.

2. The DEEP DRILLER at survival draft loads 2,068.1 long tons of ballast. What is the new draft?

- (A) 30.0 feet
- (B) 45.0 feet
- (C) 60.0 feet
- (D) 75.0 feet

If choice C is selected set score to 1.

3. Using high working tensions in the mooring system reduces the _____.

- (A) margin between working tension and breaking strength
- (B) possibility of dragging anchors
- (C) allowable deck load at operating draft
- (D) hook load at drilling depths over 10,000 feet

If choice A is selected set score to 1.

4. In order to withstand fluid head pressure on a MODU, stiffeners are often attached to the bulkhead _____.

- (A) penetrations
- (B) plating
- (C) framing
- (D) brackets

If choice B is selected set score to 1.

5. An uncontrolled flow of gas, oil, or other well fluids into the atmosphere is called a _____.

- (A) breakout
- (B) flow
- (C) kick
- (D) blowout

If choice D is selected set score to 1.

6. A virtual rise in the center of gravity of a MODU may be caused by _____.

- (A) filling a partially filled tank
- (B) transferring pipe from the setback area to the pipe rack
- (C) emptying a partially filled tank
- (D) using an on board crane to lift a freely swinging heavy object

If choice D is selected set score to 1.

7. The DEEP DRILLER, at 58.0 feet draft in sea water, places 200 long tons on board. What is the new draft?

- (A) 56.55 feet
- (B) 59.45 feet
- (C) 60.00 feet
- (D) 75.41 feet

If choice B is selected set score to 1.

8. For the purposes of the International Rules of the Road, a non-self-propelled mobile offshore drilling unit under tow is considered to be a _____.

- (A) limited vessel
- (B) non-displacement vessel
- (C) vessel
- (D) power-driven vessel

If choice C is selected set score to 1.

9. The plans, for use during emergencies aboard the DEEP DRILLER, are readily available in the _____.

- (A) wheelhouse under glass
- (B) ballast control room
- (C) pump room
- (D) OIM's office

If choice B is selected set score to 1.

10. While loaded as shown in Sample Load Form #5 (Survival), an estimated 250 long tons of snow and ice accumulates on the DEEP DRILLER at an estimated height of 127 feet. Assuming no corrective ballasting, what is the rise in the height of the center of gravity corrected for longitudinal free surface effects?

- (A) 2.62 feet
- (B) 2.20 feet
- (C) 1.03 feet
- (D) 0.71 foot

If choice C is selected set score to 1.

11. The DEEP DRILLER may remain at operating draft instead of deballasting to survival draft when _____.

- (A) the maximum wave height is greater than 64 feet
- (B) critical motion limits have been exceeded
- (C) winds are less than 70 knots
- (D) waves approach within two feet of the spider deck

If choice C is selected set score to 1.

12. A hydraulic accumulator aboard a MODU is designed to _____.

- (A) replenish fluid to a system
- (B) act as a fluid reservoir
- (C) provide overpressure relief
- (D) store fluid under pressure

If choice D is selected set score to 1.

13. Compared to internal structural plating, the exterior hull plating on a MODU is usually _____.

- (A) stronger
- (B) thinner
- (C) more corrosion resistant
- (D) a lower grade steel

If choice A is selected set score to 1.

14. In anticipation of heavy weather, it is decided to deballast the DEEP DRILLER to survival draft. The marine riser should be disconnected, pulled, and laid down. After doing so, the riser tension will be _____.

- (A) equal to the weight of the riser
- (B) dependent on the water depth
- (C) zero
- (D) applied at the riser tensioner sheaves

If choice C is selected set score to 1.

15. The maximum draft to which a drilling unit may be safely loaded is called _____.

- (A) calculated draft
- (B) load line draft
- (C) deep draft
- (D) mean draft

If choice B is selected set score to 1.

16. The probability of sulfide stress cracking in the presence of hydrogen sulfide is greatest for which of the following materials?

- (A) aluminum
- (B) rubber sealing elements
- (C) low strength steel
- (D) high strength steel

If choice D is selected set score to 1.

17. The DEEP DRILLER is loaded as shown in Sample Load Form #4 (Drilling). What would be the new sum of transverse moments for Fuel Oil if the entire contents of Tank 4P are transferred to Tank 4S?

- (A) 995 foot-tons
- (B) 16,918 foot-tons
- (C) 17,713 foot-tons
- (D) 34,381 foot-tons

If choice D is selected set score to 1.

18. The International Oil Pollution Prevention (IOPP) Certificate required by MARPOL is issued to U.S. flag MODUs by the _____.

- (A) International Maritime Organization
- (B) Environmental Protection Agency
- (C) American Bureau of Shipping
- (D) U.S. Coast Guard

If choice D is selected set score to 1.

19. A floating MODU with an initial negative metacentric height _____.

- (A) may be initially level
- (B) may lie at an angle of loll
- (C) will incline further
- (D) will capsize

If choice B is selected set score to 1.

20. Each person on the rig has a designated area to proceed to in the event of a fire. This assignment is shown clearly on which of the following documents?

- (A) Certificate of Inspection
- (B) firefighting plan
- (C) shipping articles
- (D) Muster List ("Station Bill")

If choice D is selected set score to 1.

21. Where are self-closing doors required on a MODU?

- (A) To each sleeping room
- (B) To the engine room
- (C) In each stair tower
- (D) In the galley

If choice C is selected set score to 1.

22. While drilling loaded as shown in Sample Load Form Number 4 (Drilling), the DEEP DRILLER suffers an unexpected but slowly increasing port and forward inclination. The wind and waves are light. This inclination could have been caused by _____.

- (A) the drilling crew dumping the mud
- (B) the failure of mooring lines 5 and 6
- (C) ballast tanks equalizing into tank 1P
- (D) the drill string breaking

If choice C is selected set score to 1.

23. On board a mobile offshore drilling unit, the key to the most rapid and effective response to a man overboard situation is _____.

- (A) good communication
- (B) well-conducted drills
- (C) good equipment
- (D) a dedicated crew

If choice B is selected set score to 1.

24. To determine the number of inflatable liferafts required on a mobile offshore drilling unit, you should check the _____.

- (A) Operations Manual
- (B) Certificate of Inspection
- (C) load line certificate
- (D) stability letter

If choice B is selected set score to 1.

25. What is the change in longitudinal moments for the DEEP DRILLER if 103.48 long tons of ballast is discharged from a full ballast tank 1P?

- (A) 10,944 foot-tons decrease
- (B) 7,761 foot-tons decrease
- (C) 6,707 foot-tons decrease
- (D) 155 foot-tons decrease

If choice A is selected set score to 1.

26. The DEEP DRILLER is drilling at 60 feet draft at a corrected KG of 54.0 feet. Ballast added or discharged to remain at a constant draft is at a VCG of 10 feet. How much non-liquid load would have to be removed from an average height of 130 feet above the keel to meet the maximum allowable KG at a draft of 60 feet for winds greater than 70 knots?

- (A) 1283 long tons
- (B) 817 long tons
- (C) 679 long tons
- (D) 302 long tons

If choice D is selected set score to 1.

27. A MODU crane which has been idle for a period of over six months shall be inspected to the same standards as a _____.

- (A) yearly inspection
- (B) quarterly inspection
- (C) monthly inspection
- (D) weekly inspection

If choice A is selected set score to 1.

28. The number of certificated able seamen and lifeboatmen required on a MODU is determined by the _____.

- (A) American Bureau of Shipping
- (B) Corps of Engineers
- (C) Minerals Management Service
- (D) Coast Guard

If choice D is selected set score to 1.

29. On the DEEP DRILLER, among the starboard-side valves to open when flooding through the overboard discharge into ballast tank 1S is valve _____.

- (A) 2
- (B) 3
- (C) 7
- (D) 37

If choice A is selected set score to 1.

30. Each emergency light must be marked with _____.

- (A) the letter "E"
- (B) a no-smoking symbol
- (C) the word "DANGER"
- (D) an arrow pointing to the nearest exit

If choice A is selected set score to 1.

31. The prohibition against exceeding the load line draft may be considered temporarily not applicable when _____.

- (A) column-stabilized units are operating in water depths over 600 feet
- (B) column-stabilized units are operating in waters outside U.S. jurisdiction
- (C) bottom supported units are being raised or lowered to the sea bed
- (D) bottom supported units are being towed on a move of less than 12 hours

If choice C is selected set score to 1.

32. The DEEP DRILLER as currently configured is limited to a maximum water depth of _____.

- (A) 400 feet
- (B) 600 feet
- (C) 800 feet
- (D) 1,000 feet

If choice B is selected set score to 1.

33. The DEEP DRILLER is loaded as shown in Sample Load Form #4. While the unit is deballasting, port valve 5 fails in the closed position. You may deballast from tank 2P by pumping from tank 9P by also opening valves 6 and _____.

- (A) 35
- (B) 21
- (C) 20
- (D) 8

If choice C is selected set score to 1.

34. An integral part of a blowout preventer that serves as the closing element on an open hole, and whose ends do not fit around the drill pipe but seal against each other and shut off the space below completely is the _____.

- (A) shear ram
- (B) blind ram
- (C) pipe ram
- (D) annular ram

If choice B is selected set score to 1.

35. The DEEP DRILLER is moored in 600 feet of water. The tension on anchor line #8 is 190 kips. What is the vertical component of chain tension for that line?

- (A) 53.6 long tons
- (B) 55.3 long tons
- (C) 84.8 long tons
- (D) 442.4 long tons

If choice B is selected set score to 1.

36. What fitting should you install in the rig piping to a pump to facilitate disconnecting the pump for servicing?

- (A) Nipple
- (B) Union
- (C) Coupling
- (D) Flange

If choice B is selected set score to 1.

37. When a MODU is afloat in equilibrium, the horizontal component of mooring line tensions should equal _____.

- (A) weight forces
- (B) drilling forces
- (C) environmental forces
- (D) buoyancy forces

If choice C is selected set score to 1.

38. The DEEP DRILLER, loaded as shown in the Sample Load Form #4 (Drilling), discharges a non-liquid load of 275.8 long tons from a position 130 feet above the keel, 40 feet forward of amidships, and 30 feet to port of the centerline. What is the new GMT?

- (A) 5.98 feet
- (B) 6.84 feet
- (C) 7.11 feet
- (D) 9.24 feet

If choice D is selected set score to 1.

39. The DEEP DRILLER, loaded as shown in the Sample Load Form #4 (Drilling), discharges a non-liquid load of 275.8 long tons from a position 130 feet above the keel, 40 feet forward of amidships, and 30 feet to port of the centerline. What is the improvement in KGL?

- (A) 0.67 foot
- (B) 0.98 foot
- (C) 1.15 feet
- (D) 2.06 feet

If choice C is selected set score to 1.

40. The DEEP DRILLER is planning to operate while loaded as shown in the Sample Load Form #3 (Preparing to Drill). What is the margin between KGT and maximum allowable KG?

- (A) 0.66 foot
- (B) 2.58 feet
- (C) 5.24 feet
- (D) 7.87 feet

If choice C is selected set score to 1.

41. Temporary Certificates of Inspection for offshore drilling units are effective until the _____.

- (A) Minerals Management Service approval is issued
- (B) permanent Certificate of Inspection is issued
- (C) classification society approval is issued
- (D) Operations Manual is approved

If choice B is selected set score to 1.

42. Load line regulations are designed to insure that a MODU has adequate structural strength and sufficient _____.

- (A) lifesaving equipment
- (B) mooring tension
- (C) stability
- (D) riser tension

If choice C is selected set score to 1.

43. In storm conditions, with the wind and waves from the port bow of the DEEP DRILLER in 400 feet water depth, the tensions in mooring lines 1 and 2 are 400 kips. Completely slacking the mooring lines 5 and 6 reduces the tension in mooring lines 1 and 2 to about _____.

- (A) 220 kips
- (B) 275 kips
- (C) 330 kips
- (D) 375 kips

If choice C is selected set score to 1.

44. The DEEP DRILLER is loaded as shown in the Sample Load Form Number 5 (Survival) when an unexpected slowly increasing starboard list and bow down trim occurs. A leak in 1S is found. By deballasting from ballast tanks 2S and 3S, the inclination slowly decreases. The increase in the longitudinal free surface correction is _____.

- (A) 1.25 feet
- (B) 0.90 foot
- (C) 0.83 foot
- (D) 0.34 foot

If choice C is selected set score to 1.

45. In the DEEP DRILLER, the longitudinal free surface correction (FSCL) is obtained from the total of the longitudinal free surface moments (FSML) by _____.

- (A) adding the LCG
- (B) dividing by displacement
- (C) subtracting the LCG
- (D) multiplying by displacement

If choice B is selected set score to 1.

46. In the piping systems of a MODU, what type of valve gives the least resistance to fluid flow when fully open?

- (A) Butterfly valve
- (B) Gate valve
- (C) Packless valve
- (D) Globe valve

If choice B is selected set score to 1.

47. In storm conditions, when the DEEP DRILLER is in 600 feet water depth, and the high-line tension (HLT) is 350 kips, completely slacking the two leeward mooring line tensions reduces the HLT to _____.

- (A) 375 kips
- (B) 275 kips
- (C) 245 kips
- (D) 220 kips

If choice B is selected set score to 1.

48. Among the valves that must be opened on the DEEP DRILLER to pump bilge water out of the port pump room using the number 1 bilge pump is valve _____.

- (A) 28
- (B) 36
- (C) 41
- (D) 42

If choice C is selected set score to 1.

49. The DEEP DRILLER, at a draft of 19 feet, has a KGL of 59.91 feet and an LCG of 1.57 feet. What is the trim angle?

- (A) 0.2° by the stern
- (B) 0.3° by the stern
- (C) 0.4° by the stern
- (D) 0.5° by the stern

If choice B is selected set score to 1.

50. Survival practice in the mooring system is to slack off the tensions on the leeward side and _____.

- (A) adjust as evenly as practical the windward tensions
- (B) release the anchors on the windward side
- (C) tighten the anchor buoys on the leeward side anchors
- (D) deballast the unit to transit draft

If choice A is selected set score to 1.