

U.S.C.G. Merchant Marine Exam
Mobile Offshore Drilling Units
Q438 Barge Supervisor Operations
(Sample Examination)

Choose the best answer to the following Multiple Choice Questions.

1. An entry of water, gas, oil, or other formation fluid into the wellbore is called a _____.

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

If choice A is selected set score to 1.

2. A semisubmersible displacing 700,000 cubic feet while floating in sea water (64 pounds per cubic foot) weighs _____.

- (A) 8,929 long tons
- (B) 19,509 long tons
- (C) 20,000 long tons
- (D) 24,500 long tons

If choice C is selected set score to 1.

3. The COASTAL DRILLER is operating with a wave clearance of about 20 feet. The out-of-level alarm sounds and the unit is found to be inclined 0.5 degree bow down. The recommended course of action is to _____.

- (A) jack the hull up on the bow leg
- (B) prepare to take action in case inclination increases
- (C) transfer weight, such as drill water, toward the stern
- (D) jack the hull down on the aft two legs

If choice D is selected set score to 1.

4. Use of air gaps in excess of that stated in the Limits of Elevated Service for the COASTAL DRILLER could result in _____.

- (A) reduced exposed area
- (B) increased overturning moments
- (C) increased static leg loading
- (D) the hull being in the storm wave zone

If choice B is selected set score to 1.

5. 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 to/in machinery rooms
- (D) Damage below the waterline

If choice A is selected set score to 1.

6. The maximum angle at which the intact stability curves are valid for MODU's is the angle for _____.

- (A) the limit of small-angle stability
- (B) maximum offset
- (C) downflooding
- (D) the limit of positive stability

If choice C is selected set score to 1.

7. Structural stress on a MODU can be reduced by _____.

- (A) even and symmetrical variable loading
- (B) local concentration of heavy consumables
- (C) increasing the metacentric height
- (D) lessening the effect of environmental forces

If choice A is selected set score to 1.

8. The DEEP DRILLER is loaded as shown in Sample Load Form #4 (Drilling). What would be the new sum of longitudinal moments for the Stores & Supplies (Table 6) if paint weighing 3.48 tons is added to the paint locker?

- (A) 5,996 foot-tons
- (B) 1,688 foot-tons
- (C) 495 foot-tons
- (D) 115 foot-tons

If choice B is selected set score to 1.

9. Subtracting the height of the center of gravity corrected for transverse free surface effects from the height of the transverse metacenter of a MODU yields _____.

- (A) KGT
- (B) KMT
- (C) GM
- (D) GMT

If choice D is selected set score to 1.

10. In the COASTAL DRILLER, LCG is obtained from the sum of the longitudinal moments by _____.

- (A) subtracting the sum of the weights
- (B) dividing by the sum of the weights
- (C) multiplying by the sum of the weights
- (D) adding the sum of the weights

If choice B is selected set score to 1.

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

- (A) transferring pipe from the setback area to the pipe rack
- (B) emptying a partially filled tank
- (C) filling 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.

12. What are the vertical moments for 14.0 feet of drill water in the COASTAL DRILLER's #1 drill water tank?

- (A) 2.455 ft-kips
- (B) 2.543 ft-kips
- (C) 2.725 ft-kips
- (D) 2.997 ft-kips

If choice A is selected set score to 1.

13. The initial tension set in the mooring system of a MODU establishes the _____.

- (A) maximum time it will take to disconnect the riser package in the event of a storm
- (B) distance the unit can be offset from the wellbore before the restoring forces oppose the environmental forces
- (C) minimum amount of ballast needed to keep the vessel at operating draft during normal drilling operations
- (D) maximum water depth at which drilling operations can be conducted

If choice B is selected set score to 1.

14. The DEEP DRILLER is loaded as shown in Sample Load Form #4 (Drilling). What would be the new sum of transverse free surface moments for Fuel Oil (Table 2) if the entire contents of Tank #4P are transferred to Tank #4S?

- (A) 0 foot-tons
- (B) 1,189 foot-tons
- (C) 2,378 foot-tons
- (D) 7,984 foot-tons
- (E) B

If choice E is selected set score to 1.

15. What are the maximum acceptable levels of ice and snow accumulations on the COASTAL DRILLER?

- (A) 3 inches
- (B) 2 inches
- (C) 1 1/4 inches
- (D) none

If choice D is selected set score to 1.

16. An effective braking system for windlasses on rigs in deep water is a(n) _____.

- (A) larger chain stopper
- (B) hydraulic clutch
- (C) electrical regenerative braking system
- (D) disc backstopping brake

If choice C is selected set score to 1.

17. The DEEP DRILLER, while loaded as shown in the Sample Load Form #4 (Drilling), suffers damage to the port aft column below the waterline. Pumping from tank 8P and 9P is not sufficient to prevent increasing port list and stern down trim. You should consider counterflooding in tank _____.

- (A) 10S
- (B) 1P
- (C) C2BS
- (D) 1S

If choice D is selected set score to 1.

18. While loaded as shown in the DEEP DRILLER Sample Load Form #3 (Preparing to Drill), all of the casing is discharged. What is the change in LCG?

- (A) 0.45 foot
- (B) -0.45 foot
- (C) -1.78 feet
- (D) -2.68 feet

If choice B is selected set score to 1.

19. Scouring usually occurs with soils such as _____.

- (A) mud
- (B) sand
- (C) coral
- (D) clay

If choice B is selected set score to 1.

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

If choice D is selected set score to 1.

21. It is vital to the safety of the elevated COASTAL DRILLER that the hull be kept above _____.

- (A) the charted water depth plus tidal corrections
- (B) the charted water depth
- (C) wave action
- (D) the still water level

If choice C is selected set score to 1.

22. On the COASTAL DRILLER, in case one of the two bilge pits is flooded, the other can operate through a(n)_____.

- (A) six-inch line connected to the independent isolation valves to the sea chest
- (B) separate bilge discharge manifold
- (C) independent scavenger manifold
- (D) crossover arrangement

If choice D is selected set score to 1.

23. While the COASTAL DRILLER is in transit, stability is acceptable provided that neither the KGL nor the KGT exceed _____.

- (A) GML or GMT
- (B) KML or KMT
- (C) maximum allowable KG
- (D) the height of the righting arm

If choice C is selected set score to 1.

24. In selecting a tug for moving a MODU, consideration should be given to its _____.

- (A) indicated horsepower, bollard pull, and maneuverability
- (B) indicated horsepower, bollard pull, and displacement
- (C) bollard pull, displacement, and maneuverability
- (D) indicated horsepower, maneuverability, and displacement

If choice C is selected set score to 1.

25. What is the change in longitudinal moments for the Coastal Driller if 2.5 feet of drill water is discharged from drill water tank #23?

- (A) 1,671 ft-kips
- (B) -161 ft-kips
- (C) -4,708 ft-kips
- (D) -20,052 ft-kips

If choice D is selected set score to 1.

26. In case of major damage to column C1P while the DEEP DRILLER is on location, you should pump from port-forward lower-hull tanks using _____.

- (A) all four ballast pumps
- (B) drill water pump to supplement port-side ballast pumps
- (C) both port-side ballast pumps
- (D) saltwater service pump to supplement port-side ballast pumps

If choice C is selected set score to 1.

27. A jack-up 180 feet in length with the LCF at 120 feet AFO has a true mean draft (draft at LCF) of 10 feet. If the trim is 3 feet by the stern, what is the draft at the stern?

- (A) 8.0 feet
- (B) 9.0 feet
- (C) 11.0 feet
- (D) 12.0 feet

If choice C is selected set score to 1.

28. The marine riser on the DEEP DRILLER should be disconnected if it appears the mooring line tensions will exceed 522 kips or the ball joint angle will exceed _____.

- (A) 4°
- (B) 5°
- (C) 7°
- (D) 10°

If choice D is selected set score to 1.

29. When the COASTAL DRILLER is level at a draft of 10.5 feet, what is the value of the LCG?

- (A) 00.0 feet
- (B) 111.35 feet
- (C) 119.44 feet
- (D) 120.59 feet

If choice C is selected set score to 1.

30. The effect of ocean currents is usually more evident on a rig being towed than on a tug navigating independently because the _____.

- (A) current causes yawing
- (B) speed of the tow is less
- (C) tow line catches the current
- (D) current will offset the rig

If choice B is selected set score to 1.

31. The DEEP DRILLER, at 60.0 feet draft in sea water, discharges 275.8 long tons. What is the new draft?

- (A) 56 feet
- (B) 58 feet
- (C) 60 feet
- (D) 62 feet

If choice B is selected set score to 1.

32. After jacking down your liftboat you have an unexpected list. You find that the only cause of this list must be a flooded leg. Raising the flooded leg further would adversely affect the boats stability by _____.

- (A) increasing the righting arm on the high side
- (B) causing the vessel to yaw when underway
- (C) increasing GM and causing a fast roll
- (D) raising the KG and increasing the draft which may put you in an unsafe operating condition

If choice D is selected set score to 1.

33. The COASTAL DRILLER is observed to be level at a draft of 10 feet 6 inches. At the same time, the calculated load form shows the displacement to be 13,445 kips, total longitudinal moments 1,613,466 foot-kips, and total transverse moments -10,000 foot-kips. What is the transverse location of the missing load?

- (A) 46 feet port of the centerline
- (B) 46 feet starboard of the centerline
- (C) 84 feet port of the centerline
- (D) 84 feet starboard of the centerline

If choice B is selected set score to 1.

34. The COASTAL DRILLER, loaded as shown in the Sample Load Form #3 (Drilling), dumps all the mud in pits 1, 2, 3, and 4. What is the new LCG?

- (A) 122.02 feet AFO
- (B) 125.03 feet AFO
- (C) 125.63 feet AFO
- (D) 131.46 feet AFO

If choice C is selected set score to 1.

35. While being towed at a 19.5 foot draft, the DEEP DRILLER experiences single amplitude rolls of 10° with a period of 8 seconds. You should _____.

- (A) continue towing operations at a 19.5 foot draft
- (B) ballast the rig to a 60 foot draft and continue towing operations
- (C) alter course to bring the wind off the starboard beam
- (D) ballast the rig to a 45 foot draft and check the vessel motions

If choice D is selected set score to 1.

36. The full period of motion of the DEEP DRILLER while tripping is 10 seconds and the maximum pitch angle as seen on the inclinometer is 4 degrees. From the standpoint of critical motion, the motion is _____.

- (A) unsatisfactory, place unit in standby
- (B) unsatisfactory, place setback in the pipe racks
- (C) satisfactory, continue tripping
- (D) unsatisfactory, deballast to survival draft

If choice C is selected set score to 1.

37. Which of the following would be the most probable location to encounter explosive and flammable gasses on a MODU?

- (A) on the drill floor and liquid mud handling areas
- (B) in machinery spaces
- (C) at any location
- (D) in bulk storage tanks

If choice A is selected set score to 1.

38. In evacuation from a MODU, an individual without the option of a survival craft or liferaft should enter the water on the leeward side. This procedure is valid except when which of the following circumstances applies?

- (A) there is burning oil on the water
- (B) water temperature is below 40°F
- (C) a rigid survival craft is in the area
- (D) there is a rescue craft in the area

If choice A is selected set score to 1.

39. If a man falls overboard from a rig under tow, you should FIRST _____.

- (A) deploy life buoys
- (B) notify the tug
- (C) launch a boat
- (D) sound the general alarm

If choice A is selected set score to 1.

40. A hurricane has recurved to the northeast and its forward speed is 20 knots. Your MODU is located 600 miles northeast of the hurricane's center. How long will it take for the hurricane center to reach your position if it holds its present course and speed?

- (A) 10 hours
- (B) 30 hours
- (C) 50 hours
- (D) 80 hours

If choice B is selected set score to 1.

41. Failure of both port ballast pumps on the DEEP DRILLER prevents their use. To deballast from tank 1P, you may use the _____.

- (A) port drill water pump
- (B) port saltwater service pump
- (C) port bilge pumps
- (D) starboard ballast pump and the crossover system

If choice D is selected set score to 1.

42. While the COASTAL DRILLER is elevated, the out-of-level alarm indicates that hull inclination exceeds 0.3° . What should you do?

- (A) Raise the high corner.
- (B) Confirm operation of out-of-level alarm.
- (C) Raise the low corner.
- (D) Raise unit to proper air gap and inspect for damage.

If choice B is selected set score to 1.

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

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

If choice D is selected set score to 1.

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

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

If choice D is selected set score to 1.

45. Which type of respiratory protection is preferable for repair/investigation personnel on a MODU in a hydrogen sulfide (H₂S) environment?

- (A) Pressure-Demand Self-Contained Breathing Apparatus (SCBA)
- (B) Emergency Escape Breathing Apparatus (EEBA)
- (C) Demand Self-Contained Breathing Apparatus (SCBA)
- (D) U.S. Navy Oxygen Breathing Apparatus (OBA)

If choice A is selected set score to 1.

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

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

If choice B is selected set score to 1.

47. The regulations regarding Oil Record Books do not apply to MODU's that _____.

- (A) have a valid National Pollutant Discharge Elimination System permit
- (B) are on a voyage of more than 24 hours
- (C) have a valid International Oil Pollution Prevention Certificate
- (D) are on an international voyage

If choice A is selected set score to 1.

48. A person on a fixed or floating platform engaged in oil exploration MAY discharge food waste into the sea when the distance from the nearest land is at least _____.

- (A) 3 nautical miles
- (B) 5 nautical miles
- (C) 12 nautical miles
- (D) 25 nautical miles

If choice C is selected set score to 1.

49. A qualified person must be assigned as the second in command of a lifeboat on a MODU if the lifeboat has a capacity of more than _____.

- (A) 20 persons
- (B) 30 persons
- (C) 40 persons
- (D) 50 persons

If choice C is selected set score to 1.

50. A fire pump may be used for other purposes if _____.

- (A) no relief valves are installed
- (B) the other services are run off a reducing station with a pressure gage
- (C) one of the required pumps is kept available for use on the fire main system at all times
- (D) all of the above conditions are met

If choice C is selected set score to 1.