

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

Choose the best answer to the following Multiple Choice Questions.

1. 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.

2. How much drill water is required for transfer between drill water tanks 25 and 26 in order to correct the list of the COASTAL DRILLER with total transverse moments of -6,800 ft-kips?
- (A) 200 kips from tank 25 to tank 26
 - (B) 100 kips from tank 26 to tank 25
 - (C) 100 kips from tank 25 to tank 26
 - (D) 200 kips from tank 26 to tank 25

If choice C is selected set score to 1.

3. The COASTAL DRILLER, loaded as shown in the Sample Load Form #2 (Preload), dumps the preload. However, 138.4 kips remained on board. The LM for the remaining preload is 17,992 ft-kips. What is the new LCG?
- (A) 119.33 feet AFO
 - (B) 119.44 feet AFO
 - (C) 119.54 feet AFO
 - (D) 119.66 feet AFO

If choice C is selected set score to 1.

4. Because there is a possibility of fuel oil being discharged overboard from a full fuel oil tank, it is decided to transfer 25 kips from tank 14 to tank 13. See COASTAL DRILLER Sample Load Form Number 1 (Rig Move). What would be the change in transverse free surface moments?
- (A) 1492 ft-kips
 - (B) 674 ft-kips
 - (C) 404 ft-kips
 - (D) 270 ft-kips

If choice A 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 below the waterline
- (D) Damage to/in machinery rooms

If choice A is selected set score to 1.

6. The Cantilever Beam Load Chart for the COASTAL DRILLER shows the limits in the hook setback conductor tension, and _____.

- (A) wave loads
- (B) wind loads
- (C) current loads
- (D) rotary loads

If choice D is selected set score to 1.

7. 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.

8. What is the decrease in longitudinal moments for the Deep Driller if 2.0 feet of ballast is transferred from 1S to 10P?

- (A) 15,265 ft-tons
- (B) 14,609 ft-tons
- (C) 7,293 ft-tons
- (D) 5,174 ft-tons

If choice B is selected set score to 1.

9. What pressure must a spring buoy, moored at a 500 foot depth, withstand?

- (A) 100 psig
- (B) 150 psig
- (C) 225 psig
- (D) 300 psig

If choice C is selected set score to 1.

10. When extracting the legs from the soil, the hull of the COASTAL DRILLER may be pulled down until the draft is _____.

- (A) one foot deeper than maximum load line draft
- (B) at the maximum load line draft
- (C) one foot deeper than calculated afloat draft
- (D) one foot less than maximum load line draft

If choice C is selected set score to 1.

11. While elevated, the COASTAL DRILLER prepares for a severe storm. When the setback is lowered and placed in the pipe racks, it is considered as part of the _____.

- (A) basic loads
- (B) variable loads
- (C) fixed loads
- (D) storm loads

If choice B is selected set score to 1.

12. On all mobile offshore drilling units, the deckhead of each accommodation space must be located above _____.

- (A) the deepest load line
- (B) the operating draft
- (C) the transit draft
- (D) the survival draft

If choice A is selected set score to 1.

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

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

If choice B is selected set score to 1.

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

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

If choice C is selected set score to 1.

15. The COASTAL DRILLER is loaded as shown in the Sample Load Form Number 1 (Rig Move). If the contents of the No.1 drill water tank are discharged, what would be the new LCG?

- (A) 118.46 feet AF0
- (B) 119.44 feet AF0
- (C) 119.98 feet AF0
- (D) 120.42 feet AF0

If choice D is selected set score to 1.

16. 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.

17. The COASTAL DRILLER, with a draft of 10 feet 6 inches, has a displacement of _____.

- (A) 13,662 kips
- (B) 13,553 kips
- (C) 13,011 kips
- (D) 12,252 kips

If choice A is selected set score to 1.

18. What danger is presented if a waterspout passes over a MODU?

- (A) Personnel may be injured by loose deck gear blown by the wind.
- (B) Visibility could be restricted by low clouds.
- (C) Heavy rains could cause downflooding.
- (D) Large waves could cause structural damage.

If choice A is selected set score to 1.

19. 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.

20. The time required to ballast the DEEP DRILLER to survival draft, when threatened with heavy weather, while under tow, is about _____.

- (A) 2 hours
- (B) 3 hours
- (C) 4 hours
- (D) 5 hours

If choice A is selected set score to 1.

21. 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.

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

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

If choice D is selected set score to 1.

23. The two main types of load cells used in mooring tension gauges are _____.

- (A) frictionless and hydraulic
- (B) distortion and compression
- (C) hydraulic and mechanical
- (D) magnetic and applied torque

If choice B is selected set score to 1.

24. In an emergency, if you must jump from a MODU, what is the best procedure to follow?

- (A) knees bent and held close to the body with both arms around legs
- (B) both hands holding the life preserver below the chin, with knees bent, and legs crossed
- (C) body straight and arms held tightly at the sides for feet first entry into the water
- (D) holding down the life preserver against the chest with one arm crossing the other, covering the mouth and nose with a hand, and feet together

If choice D is selected set score to 1.

25. 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.

26. The DEEP DRILLER is loaded as shown in the Sample Load Form #4 (Drilling). What would be the weight of the mud in pit #4 if the sounding level changed from 8 to 6 feet?

- (A) 80.00 long tons
- (B) 77.75 long tons
- (C) 83.34 long tons
- (D) 106.67 long tons

If choice A is selected set score to 1.

27. 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.

28. 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) starboard ballast pump and the crossover system
- (C) port bilge pumps
- (D) port saltwater service pump

If choice B is selected set score to 1.

29. If uniformly distributed in the cantilever pipe rack of the COASTAL DRILLER, how much pipe can be placed in the cantilever pipe rack area when the cantilever has been extended 40 feet aft of the transom?

- (A) 630 kips
- (B) 609 kips
- (C) 500 kips
- (D) 479 kips

If choice C is selected set score to 1.

30. 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.

31. For H₂S detection, sensitized tapes indicate H₂S presence by means of discoloration of an exposed spot on the tape. The shade of the color on the spot depends upon the concentration of H₂S and which of the following factors?

- (A) humidity at the time of exposure
- (B) air temperature at the time of the exposure
- (C) duration of the exposure
- (D) air pressure at the time of the exposure

If choice C is selected set score to 1.

32. The DEEP DRILLER is observed to be level at a draft of 60.0 feet. At the same time, the calculated load form shows the displacement to be 17,845 long tons, total longitudinal moments 51,466 foot-tons, and total transverse moments -10,000 foot-tons. What is the weight of the missing load?

- (A) 220.7 long tons
- (B) 235.3 long tons
- (C) 253.7 long tons
- (D) 272.7 long tons

If choice D is selected set score to 1.

33. 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, deballast to survival draft
- (C) unsatisfactory, place setback in the pipe racks
- (D) satisfactory, continue tripping

If choice D is selected set score to 1.

34. 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.

35. The DEEP DRILLER is loaded as shown in Sample Load Form #4 (Drilling). While the unit is deballasting, starboard valve 17 fails in the closed position. You may deballast from tank 8S by pumping from tank 9S and opening valves 18 and _____.

- (A) 35
- (B) 21
- (C) 20
- (D) 17

If choice C is selected set score to 1.

36. Under the regulations implementing MARPOL, a mobile offshore drilling unit is required to have an International Oil Pollution Prevention (IOPP) Certificate when the unit _____.

- (A) engages in a voyage to a port of another country which is a party of MARPOL
- (B) moves to a new drilling location in U.S. waters
- (C) is drilling on the Outer Continental Shelf
- (D) All of the above

If choice A is selected set score to 1.

37. 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.

38. The COASTAL DRILLER has sufficient reserve stability to overcome damage due to flooding of any one watertight compartment in winds to _____.

- (A) 36 knots
- (B) 50 knots
- (C) 70 knots
- (D) 100 knots

If choice B is selected set score to 1.

39. Fighting a rig fire in the ballast pumproom with hoses would adversely affect the stability of the rig most by _____.

- (A) reduction of drill water from the storage tanks
- (B) increasing the permeability of the pumproom
- (C) a reduced KG caused by water filling the compartment
- (D) a list caused by water filling the compartment

If choice D is selected set score to 1.

40. What are the vertical moments for the cement contents of P-tank #1 of the DEEP DRILLER if the ullage is 2.3 feet?

- (A) 4,198 ft-tons
- (B) 7,067 ft-tons
- (C) 7,096 ft-tons
- (D) 14,921 ft-tons

If choice B is selected set score to 1.

41. 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.

42. 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.

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

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

If choice A is selected set score to 1.

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

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

If choice C is selected set score to 1.

45. On the COASTAL DRILLER, the maximum aft extension of the cantilever places the rotary _____.

- (A) 68.33 feet aft of the transom
- (B) 40.00 feet aft of the transom
- (C) 38.33 feet aft of the transom
- (D) 28.33 feet aft of the transom

If choice B is selected set score to 1.

46. The discharge side of every fire pump must be equipped with a _____.

- (A) strainer
- (B) gate valve
- (C) check valve
- (D) pressure gauge

If choice D is selected set score to 1.

47. 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) GM
- (C) KMT
- (D) GMT

If choice D is selected set score to 1.

48. While drilling loaded as shown in Sample Load Form #4 (Drilling), the DEEP DRILLER suffers a sudden unexpected inclination to port and aft. Strong winds and high waves are from the starboard bow. Among the possible causes, you should consider _____.

- (A) failure of mooring lines 3 or 4
- (B) failure of mooring lines 1 or 2
- (C) leak in ballast tank 9P
- (D) ballast tanks equalizing into tank 10P

If choice A is selected set score to 1.

49. A MODU with the TCG off the longitudinal centerline inclines to an angle of _____.

- (A) heel
- (B) list
- (C) trim
- (D) loll

If choice B is selected set score to 1.

50. Among the possible causes of unexpected rapidly increasing inclination of the DEEP DRILLER while in transit is _____.

- (A) miscalculation of loads
- (B) external environmental forces
- (C) flooding due to lower-hull damage
- (D) consumption of on board variables

If choice C is selected set score to 1.