

U.S.C.G. Merchant Marine Exam  
Mobile Offshore Drilling Units  
Q441 BCO - MODU Operations  
(Sample Examination)

**Choose the best answer to the following Multiple Choice Questions.**

1. Keeping the draft of a MODU at or below the load line mark will insure that the unit has adequate \_\_\_\_\_.

- (A) reserve buoyancy
- (B) reserve ballast
- (C) critical motions
- (D) lightweight displacement

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

2. The DEEP DRILLER is loaded as shown in the Sample Load Form #2 (Ballasting to Survival). What is the shift in VCG if 100.76 long tons of ballast are added to Ballast Tank #8S to replace the discharge of all bulk materials?

- (A) 0.19 foot down
- (B) 0.44 foot down
- (C) 0.63 foot down
- (D) 1.19 feet down

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

3. Leg penetration to depths which require pullout forces greater than that which can be supplied by the buoyancy of the hull may exist in \_\_\_\_\_.

- (A) soft to firm clays
- (B) soft mud
- (C) sand
- (D) silt

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

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

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

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

5. Which of the following items should all MODU personnel be familiar with?

- (A) boarding and operating procedures
- (B) maintenance schedule
- (C) fuel consumption rates
- (D) navigational systems

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

6. Which of the following is required to have a Shipboard Oil Pollution Emergency Plan?

- (A) All vessels, regardless of size and commercial application
- (B) An oil tanker of 150 gross tons and above, or other ship of 400 gross tons and above
- (C) Any barge or ship constructed or operated in such a manner that no oil in any form can be carried aboard
- (D) An oil tanker of 400 gross tons and above, or other ships of 150 gross tons and above

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

7. For the DEEP DRILLER, it is recommended that the number of lower-hull ballast tanks with free surfaces be less than \_\_\_\_\_.

- (A) 2
- (B) 4
- (C) 6
- (D) 8

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

8. When the height of the metacenter has the same value as the height of the center of gravity, the metacentric height is equal to \_\_\_\_\_.

- (A) the height of the metacenter
- (B) the same as half the height of the metacenter
- (C) zero
- (D) the height of the center of gravity

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

9. Survival practice in the mooring system is to slack off the tensions on the leeward side and \_\_\_\_\_.

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

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

**10.** What pump may be used to supplement the bilge pump on the DEEP DRILLER?

- (A) No.1 Ballast
- (B) Drill water
- (C) Salt-Water Service
- (D) No.2 Ballast

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

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

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

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

**12.** In MODU construction, a greater number of watertight bulkheads results in \_\_\_\_\_.

- (A) increased capacity to set flooding boundaries
- (B) reduced compartmentation
- (C) greater deck load capacity
- (D) decreased capacity to set flooding boundaries

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

**13.** Environmental loading consists of the forces caused by wind, waves, and \_\_\_\_\_.

- (A) current
- (B) soil reactions
- (C) drilling
- (D) temperature

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

**14.** What is the trim of a jack-up with a forward draft of 12 feet and an after draft of 13 feet?

- (A) 0.5 foot by the stern
- (B) 2.0 feet by the stern
- (C) 0.5 feet by the head
- (D) 1.0 foot by the stern

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

**15.** While drilling loaded as shown in Sample Load Form Number 4 (Drilling), the DEEP DRILLER suffers an unexpected but slowly increasing starboard and aft inclination. The wind and waves are light. This inclination could have been caused by \_\_\_\_\_.

- (A) the drill string breaking
- (B) ballast tanks equalizing into tank 10S
- (C) the drilling crew dumping the mud
- (D) the failure of mooring lines 6 and 7

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

**16.** If you are operating on the Inland Waters of the United States, which of the following may you discharge overboard?

- (A) Bottles
- (B) Metal
- (C) Dunnage
- (D) None of the above

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

**17.** Among the valves to open on the DEEP DRILLER, if you have to transfer ballast from Tank 1P to Tank 10S using #1 ballast pump, is valve \_\_\_\_\_.

- (A) 44 Starboard
- (B) 44 Port
- (C) 33 Starboard
- (D) 33 Port

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

**18.** On the COASTAL DRILLER, except when pumping from a tank, the bilge system valves should be \_\_\_\_\_.

- (A) closed
- (B) opened for draining
- (C) in the check-stop position
- (D) cracked open

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

**19.** What is the chief advantage of an SCR or AC-DC system over a straight DC system for powering drilling rig machinery?

- (A) Several machines can be operated from a DC bus.
- (B) Commutators are eliminated.
- (C) Required power can be drawn from a common AC bus.
- (D) SCR systems are simpler.

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

**20.** In the COASTAL DRILLER, VCG is obtained from the sum of the vertical moments by \_\_\_\_\_.

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

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

**21.** The jettisoning of topside weight from a MODU serves what purpose?

- (A) It reduces free surface effect.
- (B) It lowers the center of gravity.
- (C) It raises the center of gravity.
- (D) It returns the MODU to an even keel.

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

**22.** The airborne concentrations of substances (such as H<sub>2</sub>S) under which nearly all workers may be repeatedly exposed without adverse effects defines which of the following phrases?

- (A) threshold limit values
- (B) concentration limits
- (C) exposure limits
- (D) substance limit values

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

**23.** Semisubmersibles A and B are identical. However, "A" is more tender than "B". This means that "A" relative to "B" has a \_\_\_\_\_.

- (A) lower KG
- (B) larger GZ
- (C) smaller roll angle
- (D) smaller GM

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

**24.** The COASTAL DRILLER is loaded as shown in the Sample Load Form Number 1 (Rig Move). If the contents of 6 and 7 drill water tanks are discharged, what would be the new VCG?

- (A) 47.21 feet
- (B) 47.69 feet
- (C) 48.41 feet
- (D) 49.16 feet

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

**25.** When the ullage is 6.4 feet in P-Tank #5 for the Deep Driller, what is the value of the longitudinal moment?

- (A) -2,254 foot-tons
- (B) -2,949 foot-tons
- (C) -3,392 foot-tons
- (D) -4,249 foot-tons

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

**26.** Why should you preload a mooring system above your precalculated operating mooring tensions?

- (A) This serves as a benchmark for increasing tensions in rough weather.
- (B) This insures that the anchor cable is stretched out in a straight line.
- (C) This allows you to determine existing bottom conditions.
- (D) This tests all the components of your mooring equipment.

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

**27.** On the DEEP DRILLER, among the starboard-side valves to open when deballasting from ballast tank 2S is valve \_\_\_\_\_.

- (A) 3
- (B) 5
- (C) 6
- (D) 7

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

**28.** What is the minimum required GMT for the DEEP DRILLER in winds less than 70 knots while at a draft of 60 feet?

- (A) 0.17 foot
- (B) 2.62 feet
- (C) 4.34 feet
- (D) 9.12 feet

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

**29.** The edge of a hurricane has overtaken your MODU in the Gulf of Mexico and the northwest wind of a few hours ago has shifted to the west. This is an indication that you are located in the \_\_\_\_\_.

- (A) dangerous semicircle
- (B) navigable semicircle
- (C) eye of the storm
- (D) low pressure area

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

**30.** The DEEP DRILLER, while loaded as shown in the Sample Load Form #4 (Drilling), suffers damage to the port center column below the waterline. Among the tanks from which you should pump is tank \_\_\_\_\_.

- (A) 9P
- (B) 2S
- (C) C1S
- (D) 9S

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

**31.** An uncontrolled flow of gas, oil, or other well fluids into the atmosphere is called a \_\_\_\_\_.

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

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

**32.** When the ullage is 5.7 feet in P-Tank #6 for the Deep Driller, the transverse moment for P-Tank #6 is \_\_\_\_\_.

- (A) 1,288 foot-tons
- (B) 1,887 foot-tons
- (C) 3,169 foot-tons
- (D) 4,596 foot-tons

*If choice B 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. What is the weight of the missing load?

- (A) 46 kips
- (B) 84 kips
- (C) 189 kips
- (D) 217 kips

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

**34.** The angle of loll is a stability term which applies to a floating MODU with \_\_\_\_\_.

- (A) stiff characteristics
- (B) negative initial stability
- (C) off-center loading
- (D) excessive pitch or roll

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



**35.** If you see someone fall overboard from a MODU, you should \_\_\_\_\_.

- (A) call for help and keep the individual in sight
- (B) go to the control room for the distress flares
- (C) run to the radio room to send an emergency message
- (D) immediately jump in the water to help the individual

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

**36.** Most drill ships and barges have a walled opening below the derrick, open to the water's surface and through which various drilling tools can pass down to the sea floor called a \_\_\_\_\_.

- (A) pontoon
- (B) moon pool
- (C) keyway
- (D) spider deck opening

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

**37.** The series of valves used to control the return flow in well control operations is called the \_\_\_\_\_.

- (A) accumulator manifold
- (B) valve assembly
- (C) choke manifold
- (D) standpipe manifold

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

**38.** The DEEP DRILLER is loaded as shown in the Sample Load Form #5 (Survival), when an unexpected, slowly increasing port list and bow down trim occurs. A leak in C1P is found. By deballasting from ballast tanks 2P and 3P, the inclination slowly decreases. The increase in the longitudinal free surface correction is \_\_\_\_\_.

- (A) 0.90 foot
- (B) 0.83 foot
- (C) 0.57 foot
- (D) 0.49 foot

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

**39.** 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 displacement
- (C) indicated horsepower, bollard pull, and maneuverability
- (D) bollard pull, displacement, and maneuverability

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

**40.** In a severe storm while elevated, the drilling loads on the COASTAL DRILLER must be considered as \_\_\_\_\_.

- (A) rotary loads
- (B) setback loads
- (C) variable loads
- (D) hook loads

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

**41.** Lowering the hull of the COASTAL DRILLER and refloating should be done in favorable weather conditions with wave heights not more than \_\_\_\_\_.

- (A) four feet
- (B) five feet
- (C) three feet
- (D) six feet

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

**42.** When two ballast pumps used for deballasting a single tank start cavitating, you should \_\_\_\_\_.

- (A) shut down one pump
- (B) open all valves on the discharge side to permit improved flow
- (C) close the valve on the suction side of the ballast pump to re-prime the pump
- (D) close the valve on the discharge side of the pump to re-acquire suction

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

**43.** A hydraulic accumulator aboard a MODU is designed to \_\_\_\_\_.

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

**44.** Reinforcing frames attached to a bulkhead on a MODU are called \_\_\_\_\_.

- (A) stiffeners
- (B) side longitudinals
- (C) brackets
- (D) intercostals

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

**45.** The Cantilever Beam Load Chart for the COASTAL DRILLER shows the load limits in the hook, setback, conductor tension, and \_\_\_\_\_.

- (A) wind loads
- (B) pipe rack loads
- (C) rotary loads
- (D) wave loads

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

**46.** For the DEEP DRILLER, the maximum permissible offset which can be tolerated while drilling is \_\_\_\_\_.

- (A) 10% of water depth
- (B) 6% of water depth
- (C) 4% of water depth
- (D) 2% of water depth

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

**47.** International Oil Pollution Prevention (IOPP) Certificates are required for each U.S. oil tanker at or above how many gross registered tons?

- (A) 100 gross registered tons
- (B) 150 gross registered tons
- (C) 300 gross registered tons
- (D) 400 gross registered tons

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

**48.** The DEEP DRILLER is loaded as shown in the Sample Load Form #4 (Drilling). According to the deck load graph, how much additional deck load could be added on the unit?

- (A) 561.87 long tons
- (B) 461.87 long tons
- (C) 281.34 long tons
- (D) 192.59 long tons

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

**49.** If the result of loading a MODU is an increase in the height of the center of gravity, there will always be an increase in the \_\_\_\_\_.

- (A) metacentric height
- (B) righting moment
- (C) righting arm
- (D) vertical moments

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

**50.** The draft of the DEEP DRILLER in the lightweight condition is \_\_\_\_\_.

- (A) 16.19 feet
- (B) 17.71 feet
- (C) 17.96 feet
- (D) 18.35 feet

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