

U.S.C.G. Merchant Marine Exam
Mobile Offshore Drilling Units
Q431 OIM Unrestricted
(Sample Examination)

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

1. The decks of a MODU are supported by transverse members called _____.
- A. web frames
 - B. deck beams
 - C. trusses
 - D. deck longitudinals

Correct answer: B

2. The COASTAL DRILLER is elevated in 192 feet of water. Leg penetration is 83 feet. The maximum leg reaction is 5,940 kips. The waves are 30 feet and the current is 2 knots. What is the maximum wind for drilling?
- A. 45 knots
 - B. 50 knots
 - C. 57 knots
 - D. 62 knots

Correct answer: B

3. Why is electrical power preferred over mechanical power for driving heavy machinery on drilling rigs?
- A. Less maintenance
 - B. More fuel efficient
 - C. More flexible
 - D. Lighter

Correct answer: C

4. A flooded leg on a liftboat would adversely affect the vessel's stability underway by _____.
- A. increasing the righting moment
 - B. shifting the CG (center of gravity) off center
 - C. decreasing the vessel's displacement
 - D. increasing the reserve buoyancy

Correct answer: B

5. The COASTAL DRILLER is loaded as shown in the Sample Load Form #1 (Rig Move). While in field transit, the wind speeds are predicted to increase above 70 knots. What would be the new KGL if the legs are lowered to the recommended value?
- A. 50.65 feet
 - B. 37.00 feet
 - C. 36.53 feet
 - D. 13.65 feet

Correct answer: B

6. Curve B in the Design Limits of Legs Chart of the Coastal Driller Operating Manual, shows the operating limits during normal transit based on _____.
- A. load line
 - B. environmental load
 - C. variable load
 - D. leg strength

Correct answer: D

7. The elevating system of the COASTAL DRILLER is normally limited to _____.
- A. 14,158 kips
 - B. 14,400 kips
 - C. 17,280 kips
 - D. 21,297 kips

Correct answer: B

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

Correct answer: D

9. The downflooding angle for a MODU is the maximum angle at which _____.
- A. intact stability curves are valid
 - B. neutral equilibrium exists
 - C. stability is positive
 - D. the load line is not submerged

Correct answer: A

10. What is a pinion in a jacking system?
- A. Gearwheel
 - B. Flexible coupling
 - C. Flexible joint
 - D. Flexible shaft

Correct answer: A

11. Accumulations of H₂S gas on a MODU can be dangerous. It is imperative that personnel know that H₂S gas possesses which of the listed characteristics?

- A. mildly toxic
- B. lighter than air
- C. heavier than air
- D. a yellow gas that is easily recognized

Correct answer: C

12. What is the VCG of the additional load if P-tank #4 in the DEEP DRILLER Sample Load Form #1 (Transit) is completely filled?

- A. 113.90 feet
- B. 117.01 feet
- C. 121.03 feet
- D. 123.06 feet

Correct answer: D

13. The DEEP DRILLER, loaded as shown in Sample Load Form #1 (Transit), suffers minor damage which results in flooding in tank 1P. You may pump from _____.

- A. 10S
- B. C1P
- C. 1P
- D. 2P

Correct answer: C

14. Which fitting in a MODU mud pump serves as a connection between the pony rod and the connecting rod?

- A. Nipple
- B. Flange
- C. Coupling
- D. Crosshead

Correct answer: D

15. The deck plating on a MODU is supported primarily by deck longitudinals and deck _____.

- A. frames
- B. beams
- C. girders
- D. stanchions

Correct answer: B

16. While preloading, the COASTAL DRILLER has a total weight of 21,401 kips. The LM are 2,560,416 ft-kips, and the TM are 6,206 ft-kips. What is the bow leg reaction?
- A. 7,099 kips
 - B. 7,134 kips
 - C. 7,151 kips
 - D. 7,203 kips

Correct answer: A

17. What information must be available to use the Allowable Wind and Wave Charts for the COASTAL DRILLER?
- A. Overturning moment
 - B. Soil conditions
 - C. Specific gravity of the sea water
 - D. Water depth

Correct answer: D

18. If H₂S exposure is anticipated, fixed monitoring devices aboard a MODU should have a low-level concentration alarm to alert personnel. at what concentration level will the alarm activate?
- A. 10 PPM
 - B. 20 PPM
 - C. 30 PPM
 - D. 40 PPM

Correct answer: A

19. The DEEP DRILLER is loaded as shown in the Sample Load Form #1 (Transit). Excessive motion makes it necessary to ballast down to survival draft. It is decided to check the stability at the intermediate draft of 32 feet. If the added ballast has an average VCG of 9.03 feet, and the sum of free surface moments is 56,244 foot-tons, what is the new margin on the maximum allowable KG?
- A. 6.23 feet
 - B. 5.11 feet
 - C. 4.86 feet
 - D. 4.06 feet

Correct answer: D

20. The number of certificated able seamen and lifeboatmen required on a MODU is determined by the _____.
- A. American Bureau of Shipping
 - B. Minerals Management Service
 - C. Corps of Engineers
 - D. Coast Guard

Correct answer: D

21. The DEEP DRILLER suffers minor flooding of the port pump room while in transit. If both port bilge pumps fail to dewater the pump room, you may _____.
- A. use port ballast pumps
 - B. use port saltwater service pump
 - C. use port drill water pump
 - D. use starboard ballast pumps and crossover system

Correct answer: C

22. For a jack-up, the angle of maximum stability corresponds approximately to the angle of _____.
- A. the load line
 - B. downflooding
 - C. deck edge immersion
 - D. loll

Correct answer: C

23. What is the sounding in drill water tank #1 for the COASTAL DRILLER, if the weight of drill water in the tank is 388.32 kips?
- A. 14.5 feet
 - B. 15.0 feet
 - C. 15.5 feet
 - D. 16.0 feet

Correct answer: C

24. 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. bottom supported units are being towed on a move of less than 12 hours
 - C. column-stabilized units are operating in waters outside U.S. jurisdiction
 - D. bottom supported units are being raised or lowered to the sea bed

Correct answer: D

25. A semisubmersible, while floating level, displaces 20,000 long tons. LCB is 3.0 feet forward of amidships. Bulk, weighing 300 long tons, is placed in P-tanks located 40 feet aft of amidships. What is the new LCG?
- A. 3.64 feet forward of amidships
 - B. 2.45 feet forward of amidships
 - C. 2.36 feet forward of amidships
 - D. 0.55 foot forward of amidships

Correct answer: C

26. The DEEP DRILLER, while loaded as shown in the Sample Load Form #5, loads 275.8 long tons. The resulting trim by the stern is 3 feet and list to port is 2 feet. What is the draft at the starboard aft draft mark?
- A. 44 feet 6 inches
 - B. 47 feet 0 inches
 - C. 47 feet 6 inches
 - D. 48 feet 6 inches

Correct answer: C

27. What is the length of the catenary when the DEEP DRILLER is anchored in 600 feet of water and the anchor line tension is 170 kips?
- A. 891 feet
 - B. 1348 feet
 - C. 1493 feet
 - D. 1657 feet

Correct answer: C

28. On a MODU, how many ring buoys are required to have a buoyant line attached?
- A. One ring life buoy
 - B. One ring life buoy on each side of the MODU
 - C. Three ring life buoys
 - D. Two ring life buoys on each side of the MODU

Correct answer: B

29. The full period of motion of the DEEP DRILLER while tripping is 8 seconds and the maximum pitch angle as seen on the inclinometers 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

Correct answer: D

30. 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

Correct answer: B

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

Correct answer: C

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

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

Correct answer: B

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

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

Correct answer: D

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

- A. waves approach within two feet of the spider deck
- B. winds are greater than 70 knots
- C. critical motion limits have not been exceeded
- D. the maximum wave height is greater than 64 feet

Correct answer: C

35. While in 150 feet water depth when the pitch angle of the COASTAL DRILLER is 1 degree, the platform pitch period for going on location should be longer than _____.

- A. 0.2 second
- B. 3.2 seconds
- C. 7.0 seconds
- D. 9.2 seconds

Correct answer: C

36. The COASTAL DRILLER, in transit with winds less than 70 knots, has a draft of 10 feet 8 inches. The VM are 541,257 ft-kips, FSML are 32,000 ft-kips, and FSMT are 24,000 ft-kips. The margin on the maximum allowable KG is _____.

- A. -2.3 feet
- B. 0.0 feet
- C. 23.7 feet
- D. 26.0 feet

Correct answer: C

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

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

Correct answer: B

38. A survival craft being used to pick up a person who has fallen overboard from a MODU should approach the person _____.

- A. under oars
- B. with the wind
- C. at a high rate of speed
- D. against the wind

Correct answer: D

39. The longitudinal location of the center of flotation for the COASTAL DRILLER has a value of _____.

- A. 207.33 feet AF0
- B. 160.33 feet AF0
- C. 119.44 feet AF0
- D. 38.33 feet AF0

Correct answer: C

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

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

Correct answer: A

41. Who is responsible for lowering the survival craft?

- A. Roustabout
- B. Helmsman
- C. Last man aboard
- D. First man aboard

Correct answer: B

42. The element used to keep weight on the bit at a constant value in spite of up-and-down movement of a MODU during floating drilling operations is the heave or drill string _____.

- A. equalizer
- B. tensioner
- C. compensator
- D. stabilizer

Correct answer: C

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

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

Correct answer: C

44. Apparent wind speed blowing across a MODU under tow can be measured by a(n) _____.

- A. barometer
- B. wind vane
- C. anemometer
- D. thermometer

Correct answer: C

45. 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. power-driven vessel
- C. vessel
- D. non-displacement vessel

Correct answer: C

46. What is the percentage of oxygen in a typical sample of uncontaminated air?

- A. 12 percent
- B. 15 percent
- C. 18 percent
- D. 21 percent

Correct answer: D

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

Correct answer: C

48. The two factors which make underwater hull repair of a MODU difficult are accessibility and the _____.
- A. threat of progressive flooding
 - B. pressure exerted by the water
 - C. availability of tools
 - D. shape of the hull

Correct answer: B

49. A jack-up level at 12.5 feet draft transfers 100 kips of drill water from a tank with a TCG of -30 feet to a starboard tank with a TCG of 70 feet. The resulting starboard draft is 13 feet. The moment required to change list one inch (MCL1") is _____.
- A. 667 foot-kips
 - B. 833 foot-kips
 - C. 1,400 foot-kips
 - D. 1,667 foot-kips

Correct answer: B

50. You are aboard a vessel which is near a platform engaged in oil exploration. Under U.S. pollution regulations, you may NOT discharge garbage if you are within _____.
- A. 1650 feet (500 meters)
 - B. 1750 feet (533 meters)
 - C. 1970 feet (600 meters)
 - D. 2500 feet (762 meters)

Correct answer: A