

U.S.C.G. Merchant Marine Exam
Master Less than 100 Gross Registered Tons
Q349 Navigation General
(Sample Examination)

Choose the best answer to the following Multiple Choice Questions.

1. On 6 July 1983, at 1830 DST (ZD +4), what will be the predicted height of tide at Newburgh, NY?

- (A) 2.0 feet
- (B) 3.3 feet
- (C) 2.4 feet
- (D) 2.6 feet

If choice A is selected set score to 1.

2. A tide is called diurnal when _____.

- (A) the high tide and low tide are exactly six hours apart
- (B) the high tide is higher and the low tide is lower than usual
- (C) two high tides occur during a lunar day
- (D) only one high and one low water occur during a lunar day

If choice D is selected set score to 1.

3. Under the IALA Buoyage System, which topmark shown in illustration D023Ng below will be displayed on a safe water mark?

- (A) A
- (B) B
- (C) C
- (D) D

If choice A is selected set score to 1.

4. While proceeding along the Norwegian coast on course 039°T, you sight the black-yellow-black banded buoy shown in illustration D021NG below, bearing 053°T. What action should you take?

- (A) Maintain course
- (B) Alter course to 053° and leave the buoy close aboard on either side
- (C) Alter course to port to rapidly open the bearing to the right
- (D) Alter course to 060° and ensure that the true bearings decreases

If choice D is selected set score to 1.

5. If your vessel must pass through a draw during a scheduled closure period, what signal should you sound to request the opening of the draw?

- (A) One prolonged blast followed by one short blast
- (B) Three short blasts
- (C) One prolonged blast followed by three short blasts
- (D) Five short blasts

If choice D is selected set score to 1.

6. In the U.S. Aids to Navigation System, red and green horizontally-banded buoys mark _____.

- (A) general anchorage areas
- (B) fishing grounds
- (C) junctions or bifurcations
- (D) channels for shallow draft vessels

If choice C is selected set score to 1.

7. Determine the approximate geographic visibility of an object, with a height above the water of 85 feet (25.9 meters), for an observer with a height of eye of 60 feet (18.3 meters).

- (A) 18.4 nm
- (B) 19.9 nm
- (C) 21.5 nm
- (D) 20.8 nm

If choice B is selected set score to 1.

8. Your vessel is proceeding up a channel, and you see a pair of range lights that are in line dead ahead. The chart indicates that the direction of this pair of lights is $093^{\circ}T$, and the variation is $6^{\circ}E$. If the heading of your vessel at the time of the sighting is 097° per standard magnetic compass, what is the correct deviation?

- (A) $5^{\circ}E$
- (B) $10^{\circ}E$
- (C) $5^{\circ}W$
- (D) $10^{\circ}W$

If choice D is selected set score to 1.

9. You are steering $202^{\circ}T$, and a light is picked up dead ahead at a distance of 14.6 miles at 2234. You change course to pass the light 5 miles off abeam to starboard. If you are making 21 knots, what is your ETA at the position 5 miles off the light?

- (A) 2310
- (B) 2313
- (C) 2316
- (D) 2319

If choice B is selected set score to 1.

10. In which country would you expect the channels to be marked with the IALA-B Buoyage System?

- (A) Tanzania
- (B) Norway
- (C) New Zealand
- (D) Brazil

If choice D is selected set score to 1.

11. Your vessel is on a course of 082°T at 19 knots.

At 0255 a light bears 059.5°T, and at 0312 the light bears 037°T.

At what time and at what distance off will your vessel be when abeam of the light?

- (A) 0321, 4.7 miles
- (B) 0324, 3.8 miles
- (C) 0333, 5.1 miles
- (D) 0327, 4.3 miles

If choice B is selected set score to 1.

12. You are underway on course 215°T at 12 knots. The current is 000°T at 2.3 knots. What is the speed being made good?

- (A) 8.5 knots
- (B) 10.2 knots
- (C) 11.2 knots
- (D) 10.9 knots

If choice B is selected set score to 1.

13. You are underway on course 160°T at 10 knots. The current is 210°T at 0.9 knots. What is the course made good?

- (A) 169°T
- (B) 160°T
- (C) 156°T
- (D) 164°T

If choice D is selected set score to 1.

14. With respect to failure warnings and status indications, GPS receivers should provide, at a minimum, _____.

- (A) a cross-track error alarm
- (B) an alarm if engine speed is suddenly reduced
- (C) a warning of loss of position
- (D) an indication of a change in satellite configuration

If choice C is selected set score to 1.

15. By convention, the Earth's south magnetic pole is colored _____.

- (A) red
- (B) blue
- (C) white
- (D) black

If choice A is selected set score to 1.

16. While on a course of 216° pgc, a light bears 12° on the port bow at a distance of 11.2 miles. Which course should you steer to pass 2 miles abeam of the light leaving it to port?

- (A) 210° pgc
- (B) 214° pgc
- (C) 212° pgc
- (D) 208° pgc

If choice B is selected set score to 1.

17. The radar control that shortens all echoes on the display and reduces clutter caused by rain or snow is the _____.

- (A) sensitivity time control (sea clutter control)
- (B) fast time constant (differentiator)
- (C) brilliance control
- (D) receiver gain control

If choice B is selected set score to 1.

18. In modern fathometers the sonic or ultrasonic sound waves are produced electrically by means of a(n) _____.

- (A) amplifier
- (B) transmitter
- (C) transceiver
- (D) transducer

If choice D is selected set score to 1.

- 19.** You are approaching Chatham Strait from the south in foggy weather. You have Coronation Island and Hazy Islands on the radar. Suddenly the radar malfunctions. You then resort to using whistle echoes to determine your distance off Coronation Island. Your stopwatch reads 16.3 seconds for the echo to be heard. How far are you off Coronation Island?
- (A) 1.0 mile
 - (B) 1.5 miles
 - (C) 2.0 miles
 - (D) 2.5 miles

If choice B is selected set score to 1.

- 20.** You are approaching an open drawbridge and sound the proper signal. You receive no acknowledgment from the bridge. Which action should you take?
- (A) Hold in the channel as a vessel is closing the bridge from the other direction.
 - (B) Approach with caution and proceed through the open draw.
 - (C) Approach under full control to a position no closer than 400 yards from the bridge and await a signal from the bridge.
 - (D) Resound the opening signal and do not pass through the bridge until signals have been exchanged.

If choice B is selected set score to 1.

- 21.** Which of the following traits possessed by an articulated light makes it superior to other types of buoys?
- (A) The fog horn signal travels farther to sea
 - (B) The radar reflectors return better signals
 - (C) It is equipped with strobe lights
 - (D) It has a reduced watch circle

If choice D is selected set score to 1.

- 22.** The buoy symbol printed on your chart is leaning to the northeast. This indicates _____.
- (A) nothing special for navigational purposes
 - (B) you should stay to the north or east of the buoy
 - (C) the buoy is a major lighted buoy
 - (D) you should stay to the west or south of the buoy

If choice A is selected set score to 1.

23. An occulting light is one in which _____.

- (A) the periods of light and darkness are equal
- (B) the period of light exceeds the period of darkness
- (C) the period of darkness exceeds the period of light
- (D) there is only a partial eclipse of the light

If choice B is selected set score to 1.

24. Which publication lists Class I and II private aids to navigation in or along navigable waters of the United States?

- (A) Light List
- (B) Sailing Directions
- (C) Aids to Navigation Manual
- (D) List of Private Aids

If choice A is selected set score to 1.

25. Mean lower low water is the reference plane used for _____.

- (A) all vertical measurements
- (B) water depths on the U.S. east coast only
- (C) soundings on the U.S. east and west coasts
- (D) heights above water for lights, mountains, etc.

If choice C is selected set score to 1.

26. Geographic range is the maximum distance at which a light may be seen under _____.

- (A) perfect visibility conditions, limited only by interference from background lighting
- (B) perfect visibility conditions, limited only by the curvature of the Earth
- (C) existing visibility conditions, limited only by the intensity of the light
- (D) existing visibility conditions, limited only by the curvature of the Earth

If choice B is selected set score to 1.

27. A harbor chart could have a scale of _____.

- (A) not more than 1:25,000
- (B) 1:150,000
- (C) not less than 1:500,000
- (D) 1:35,000

If choice D is selected set score to 1.

28. The compass rose on a nautical chart indicates both variation and _____.

- (A) deviation
- (B) annual rate of variation change
- (C) compass error
- (D) precession

If choice B is selected set score to 1.

29. The depth of water on a chart is indicated as 23 meters. This is equal to _____.

- (A) 11.5 fathoms
- (B) 12.6 fathoms
- (C) 69.0 feet
- (D) 78.6 feet

If choice B is selected set score to 1.

30. What agency of the U.S. Government issues charts of U.S. waters and Coast Pilots?

- (A) U.S. Naval Observatory
- (B) National Ocean Service
- (C) U.S. Coast Guard
- (D) National Imagery and Mapping Agency

If choice B is selected set score to 1.

31. Charts should be corrected by using information published in the _____.

- (A) Notice to Mariners
- (B) Light List
- (C) American Practical Navigator
- (D) Coast Pilot

If choice A is selected set score to 1.

32. A special mark (yellow buoy), if lighted, may exhibit which light rhythm?

- (A) Morse "A"
- (B) Equal interval
- (C) Flashing
- (D) Occulting

If choice C is selected set score to 1.

33. A buoy marking a wreck will show a(n) _____.

- (A) white light FL (2) and a topmark of 2 black spheres
- (B) yellow light and will be numbered
- (C) continuous quick white light and may be numbered
- (D) occulting green light and may be lettered

If choice A is selected set score to 1.

34. Which type of daymark is used to mark the starboard side of the channel when entering from sea?

- (A) Red and white octagon
- (B) Green square
- (C) Black and white diamond
- (D) Red triangle

If choice D is selected set score to 1.

35. Port side daymarks may be _____.

- (A) black and white
- (B) numbered
- (C) of any shape
- (D) octagonal

If choice B is selected set score to 1.

36. When a dual purpose marking is used, the mariner following the Intracoastal Waterway should be guided by the _____.

- (A) color of the top band
- (B) shape of the aid
- (C) color of the aid
- (D) shape of the yellow mark

If choice D is selected set score to 1.

37. The total magnetic effects which cause deviation of a vessel's compass can be broken down into a series of components which are referred to as _____.

- (A) divisional parts
- (B) coefficients
- (C) equations
- (D) fractional parts

If choice B is selected set score to 1.

38. Magnets in the binnacles of magnetic compasses are used to reduce the effect of _____.

- (A) local attraction
- (B) deviation
- (C) variation
- (D) All of the above

If choice B is selected set score to 1.

39. The region containing 3/4 of the mass of the atmosphere and the region to which are confined such phenomena as clouds, storms, precipitation and changing weather conditions is called _____.

- (A) troposphere
- (B) stratosphere
- (C) stratopause
- (D) tropopause

If choice A is selected set score to 1.

40. A sling psychrometer is used to measure _____.

- (A) barometric pressure
- (B) engine temperature
- (C) dry bulb and wet bulb temperatures
- (D) seawater temperature

If choice C is selected set score to 1.

41. During the winter months, the southeast trade winds are _____.

- (A) weaker than during the summer months
- (B) drier than during the summer months
- (C) wetter than during the summer months
- (D) stronger than during the summer months

If choice D is selected set score to 1.

42. A "Norther" in the Gulf of Mexico is _____.

- (A) a strong northerly wind that generally occurs between November and March
- (B) a wind shift to the north accompanied by a drop in temperature
- (C) a forcible northerly wind of at least 20 knots
- (D) All of the above

If choice D is selected set score to 1.

43. Anticyclones are usually characterized by _____.

- (A) dry, fair weather
- (B) high winds and cloudiness
- (C) overcast skies
- (D) gustiness and continuous precipitation

If choice A is selected set score to 1.

44. If a weather bulletin shows the center of a low pressure system to be 100 miles due east of you, what winds can you expect in the Southern Hemisphere?

- (A) North-northwesterly
- (B) South-southeasterly
- (C) North-northeasterly
- (D) South-southwesterly

If choice D is selected set score to 1.

45. What do the numbers on isobars indicate?

- (A) temperature
- (B) barometric pressure
- (C) wind speed
- (D) rain in inches

If choice B is selected set score to 1.

46. The velocity of a rotary tidal current will be decreased when the Moon is _____.

- (A) full
- (B) new
- (C) at apogee
- (D) All of the above

If choice C is selected set score to 1.

47. The range of tide is the _____.

- (A) maximum depth of the water at high tide
- (B) difference between the heights of high and low tide
- (C) duration of time between high and low tide
- (D) distance the tide moves out from the shore

If choice B is selected set score to 1.

48. You are at anchor in the anchorage at the entrance to Delaware Bay. If you weigh anchor at 1445 DST (ZD +4) on 24 July 1983 and proceed northbound enroute to Philadelphia at a speed of 10 knots, you will have _____.

- (A) an ebb current north of New Castle, DE
- (B) a weak flood between Reedy Island and Edgemoor
- (C) a flood current from Ship John Shoal Lt. to Philadelphia
- (D) a flood current the entire trip

If choice B is selected set score to 1.

49. You want to transit Hell Gate, NY on 23 July 1983. What is the period of time around the AM (ZD +4) slack before ebb when the current will be less than 0.3 knot?

- (A) 0939 to 0957
- (B) 0348 to 0356
- (C) 0844 to 0852
- (D) 0943 to 0953

If choice D is selected set score to 1.

50. Your vessel will be docking at Chester, PA, during the evening of 22 April 1983. The chart shows a depth of 20 feet (6.1 meters) at the pier. What will be the depth of water available at 1856 EST (ZD +5)?

- (A) 22.4 feet (6.8 meters)
- (B) 24.9 feet (7.6 meters)
- (C) 25.7 feet (7.8 meters)
- (D) 23.4 feet (7.2 meters)

If choice D is selected set score to 1.

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