

U.S.C.G. Merchant Marine Exam

Master of Unlimited Tonnage

Q304 Navigation General - Great Lakes and Inland

(Sample Examination)

Choose the best answer to the following Multiple Choice questions.

1. 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.

2. You are steering 163°T, and a light is picked up dead ahead at a distance of 11 miles at 0142. You change course to pass the light 2 miles off abeam to starboard. If you are making 13 knots, what is your ETA at the position 2 miles off the light?
- (A) 0226
 - (B) 0235
 - (C) 0232
 - (D) 0229

If choice C is selected set score to 1.

3. 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.

4. 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.

5. When a light is first seen on the horizon it will disappear again if the height of eye is immediately lowered several feet. When the eye is raised to its former height the light will again be visible. This process is called _____.

- (A) obscuring a light
- (B) checking a light
- (C) bobbing a light
- (D) raising a light

If choice C is selected set score to 1.

6. 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.

7. 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.

8. Which navigational equipment is required to be tested and logged before a towing vessel embarks on a voyage of more than 24 hours?

- (A) GPS receiver(s)
- (B) All required navigational equipment, without exception
- (C) Radar(s) and VHF radio(s)
- (D) Compass and/or swing meter

If choice B is selected set score to 1.

9. Under the IALA cardinal system, a mark with quick white light showing 3 flashes every 10 seconds indicates that the safest water in the area is on the _____.

- (A) north side of the mark
- (B) east side of the mark
- (C) south side of the mark
- (D) west side of the mark

If choice B is selected set score to 1.

10. 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.

11. If the current and wind are in the same direction, the sea surface represents a wind speed _____.

- (A) higher than actually exists
- (B) that has no proportional relationship
- (C) that actually exists
- (D) lower than actually exists

If choice D is selected set score to 1.

12. 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.

13. 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.

14. A vertically-striped buoy may be _____.

- (A) striped black and green
- (B) striped black and yellow
- (C) lighted with a white light
- (D) lighted with a red light

If choice C is selected set score to 1.

15. When you are steering on a pair of range lights and find the upper light is in line above the lower light, you should _____.

- (A) wait until the lights are no longer in a vertical line
- (B) continue on the present course
- (C) come right
- (D) come left

If choice B is selected set score to 1.

16. You are heading out to sea in a buoyed channel and see a quick-flashing green light on a buoy ahead of you. In U.S. waters, you should leave the buoy _____.

- (A) well clear on either side
- (B) to port
- (C) to starboard
- (D) about 50 yards off on either side

If choice C is selected set score to 1.

17. 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.

18. A white buoy with an open-faced orange diamond on it indicates _____.

- (A) the buoy is a mooring buoy
- (B) operating restrictions are in effect
- (C) danger
- (D) vessels are excluded from the area

If choice C is selected set score to 1.

19. An orange and white buoy marking an area where operating restrictions are in effect will be marked with which symbol?

- (A) Rectangle
- (B) Diamond with a cross
- (C) Open-faced diamond
- (D) Circle

If choice D is selected set score to 1.

20. Under the U.S. Aids to Navigation System on the Western Rivers, a preferred-channel buoy is _____.

- (A) solid red
- (B) solid green
- (C) horizontally-banded red and green
- (D) vertically-striped red and white

If choice C is selected set score to 1.

21. 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.

22. You have another ship overtaking you close aboard to starboard. You have 3 radar targets bearing 090° relative at ranges of .5 mile, 1 mile, and 1.5 miles. In this case, the unwanted echoes are called _____.

- (A) multiple echoes
- (B) spoking
- (C) indirect echoes
- (D) side-lobe echoes

If choice A is selected set score to 1.

23. 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.

24. The winds of the "roaring forties" are strongest near _____.

- (A) 40°N
- (B) 50°N
- (C) 50°S
- (D) 40°S

If choice C is selected set score to 1.

25. You are steaming in a westerly direction along the Gulf Coast. You see ahead of you a lighted buoy showing a red isophase light. Which action should you take?

- (A) Alter course and leave the buoy near by on either side.
- (B) Alter course and pass the buoy well-off on either side.
- (C) Alter course to port and leave the buoy to starboard.
- (D) Alter course to starboard and leave the buoy to port.

If choice C is selected set score to 1.

26. 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.

27. 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.

28. The light characteristic of composite group flashing (2 + 1) is used in the Aids to Navigation System on the Western Rivers for lights on _____.

- (A) daymarks with no lateral significance
- (B) preferred-channel buoys
- (C) the right descending bank
- (D) the left descending bank

If choice B is selected set score to 1.

29. While proceeding downriver (descending) you sight a red diamond-shaped panel with small, red reflector squares in each corner on the left bank. Under the U.S. Aids to Navigation System on the Western Rivers this is a _____.

- (A) passing daymark
- (B) cable crossing
- (C) crossing daymark
- (D) special purpose signal

If choice C is selected set score to 1.

- 30.** 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.

- 31.** You are required to enter a lock on your voyage. Information on the lock regulations, signals, and radio communications can be found in _____.
- (A) the publication "Key to the Locks"
 - (B) Coast Pilot
 - (C) Corps of Engineer Information Bulletin
 - (D) Bowditch

If choice B is selected set score to 1.

- 32.** Allied Naval Control of Shipping (NCS) has been established. Which statement is TRUE?
- (A) The Naval Control of Shipping Organization of each nation will serve their own ships only.
 - (B) The conduct of US-flag ships in an allied port will be controlled by US NCS authorities.
 - (C) Allied ships, which are at sea when an emergency is declared, will all be controlled by a central authority.
 - (D) After Naval Control of Shipping has been established, permission to sail must come from local naval authorities or consular officers.

If choice D is selected set score to 1.

- 33.** 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.

34. What publication has information on the climate, distances, navigation regulations, outstanding landmarks, channels and anchorages of Long Island Sound?

- (A) Pilot Chart
- (B) Light List
- (C) Sailing Directions
- (D) Coast Pilot

If choice D is selected set score to 1.

35. The Light List Does NOT contain information on _____.

- (A) radio beacon systems
- (B) radio direction finder calibration stations
- (C) aeronautical lights useful for marine navigation
- (D) the Global Positioning System (GPS)

If choice C is selected set score to 1.

36. The directive force of a gyrocompass _____.

- (A) remains the same at all latitudes
- (B) increases with latitude, being maximum at the geographic poles
- (C) decreases with latitude, being maximum at the geographic equator
- (D) is greatest when a vessel is near the Earth's magnetic equator

If choice C is selected set score to 1.

37. 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.

38. A system of reservoirs and connecting tubes in a gyro compass is called a _____.

- (A) gyrotron
- (B) mercury ballistic
- (C) rotor
- (D) spider element

If choice B is selected set score to 1.

39. 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.

40. 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.

41. You have replaced the chart paper in the course recorder. What is NOT required to ensure that a correct trace is recorded?

- (A) Adjust the chart paper to indicate the correct time
- (B) Line the course pen up on the exact heading of the ship
- (C) Set the zone pen on the correct quadrant
- (D) Test the electrical gain to the thermograph pens

If choice D is selected set score to 1.

42. 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.

43. 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.

44. 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.

45. What will NOT induce errors into a Doppler sonar log?

- (A) Roll
- (B) Change in trim
- (C) Pitch
- (D) Increased draft

If choice D is selected set score to 1.

46. 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.

47. 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.

48. 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.

49. In many areas "atoll" clouds (clouds of vertical development) are produced over small islands. These are the result of _____.

- (A) warm air from the sea rising over higher land areas
- (B) descending air over the islands
- (C) rising air currents produced by the warm islands
- (D) cool land air mixing with warm sea air

If choice C is selected set score to 1.

50. 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.

51. 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.

52. On the Mississippi and Ohio Rivers, there is a special type of fog known as steam fog. It is caused by _____.

- (A) a rapid cooling of the ground on a clear night
- (B) cold air passing over much warmer water
- (C) rain coming out of a warm air mass aloft
- (D) warm air passing over much colder water

If choice B is selected set score to 1.

53. Which installed equipment must be tested and logged when a new Master assumes command?

- (A) Vessel control alarms
- (B) Navigational lights and search lights
- (C) Internal communications, including sound-powered telephones
- (D) All of the above must be tested

If choice D is selected set score to 1.

54. A current perpendicular to a vessel's track has the greatest effect on the vessel's course made good _____.

- (A) in shallow water
- (B) in deep water
- (C) at low vessel speeds
- (D) at high vessel speeds

If choice C is selected set score to 1.

55. You are proceeding up a channel at night. It is marked by a range which bears 185° T. You steady up on a compass course of 180° with the range in line dead ahead. This indicates that you(r) _____.

- (A) are being affected by a southerly current
- (B) must come right to get on the range
- (C) course is in error
- (D) compass has some easterly error

If choice D is selected set score to 1.

56. Your dead reckoning position should be plotted _____.

- (A) at least every hour on the hour in the open waters of the sea
- (B) whenever an estimated position is plotted
- (C) when coming on or going off soundings
- (D) when it agrees with your GPS position

If choice A is selected set score to 1.

57. A vessel's position should be plotted using bearings of _____.

- (A) fixed known objects on shore
- (B) buoys close at hand
- (C) fixed objects
- (D) All of the above

If choice A is selected set score to 1.

58. You are underway in a vessel with a draft of 6.0 feet. You are in an area where the charted depth of the water is 4 fathoms. You would expect the depth of water beneath your keel to be approximately _____.

- (A) 12 feet
- (B) 18 feet
- (C) 24 feet
- (D) 30 feet

If choice B is selected set score to 1.

59. 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.

60. The tides in Boston Harbor generally _____.

- (A) are diurnal in nature
- (B) have their variations caused by the changing declination of the Moon
- (C) have a greater range than the tides in Gulf Coast ports
- (D) All of the above

If choice C is selected set score to 1.

61. 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.

62. 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.

63. Your vessel is proceeding down 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 229°T , and variation is 6°W . If the heading of your vessel at the time of the sighting is 232° per standard magnetic compass, what is the deviation?

- (A) 9°W
- (B) 3°W
- (C) 3°E
- (D) 9°E

If choice C is selected set score to 1.

64. 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°T , and the variation is 6°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°E
- (B) 10°E
- (C) 5°W
- (D) 10°W

If choice D is selected set score to 1.

65. You are steering 202°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.

66. 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.

67. 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.

68. 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.

69. 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.

70. (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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