U.S.C.G. Merchant Marine Exam

Mate Offshore Supply Vessels

Q211 Navigation General – Near Coastal

(Sample Examination)
Choose the best answer to the following Multiple Choice Questions:

1. In the Northern Hemisphere, when the center of a high pressure system is due east of your position, you can expect winds from which direction?
   - (A) North to west
   - (B) North to east
   - (C) South to east
   - (D) South to west

   If choice C is selected set score to 1.

2. A ship is on course 195° at a speed of 15 knots. The apparent wind is from 40° on the port bow, speed 30 knots. What are the direction and speed of the true wind?
   - (A) 068°T, 30 knots
   - (B) 127°T, 21 knots
   - (C) 263°T, 42 knots
   - (D) 292°T, 42 knots

   If choice B is selected set score to 1.

3. The shoreline shown on nautical charts of areas affected by large tidal fluctuations is usually the line of mean __________.
   - (A) tide level
   - (B) lower low water
   - (C) high water
   - (D) low water

   If choice C is selected set score to 1.

4. In illustration D051NG below, why was the position labeled "E" plotted?
   - (A) A dead reckoning position is plotted within a half-hour of each course change
   - (B) The position is a running fix
   - (C) The vessel's position was fixed at 1145
   - (D) A dead reckoning position is plotted for each speed change

   If choice D is selected set score to 1.

5. Which hand held instrument is used to measure distances between objects and the ship?
   - (A) A vernier
   - (B) A stadimeter
   - (C) A psychrometer
   - (D) A hygrometer

   If choice B is selected set score to 1.
6. Lines drawn through points on the Earth having the same atmospheric pressure are known by which term?
   • (A) Isobars
   • (B) Isothermal
   • (C) Seismics
   • (D) Millibars

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

7. How are cumulonimbus clouds formed?
   o (A) In heavy rainstorms
   o (B) By horizontal air movements
   • (C) By vertical air movements
   o (D) By any movement of moist air

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

8. Which information does the outer ring of a compass rose on a nautical chart provide?
   • (A) True directions
   • (B) Variation
   • (C) Magnetic directions
   o (D) Annual rate of variation change

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

9. Information about the pilotage available at Miami harbor may best be obtained from which publication?
   o (A) Pilot Chart
   o (B) Sailing Directions
   • (C) United States Coast Pilot
   o (D) World Port Index

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

10. Magnets in the binnacles of magnetic compasses are used to reduce which effect?
    o (A) Local attraction
    o (B) Variation
    • (C) Deviation
    o (D) Static build-up

    *If choice C is selected set score to 1.*
11. The height of a wave is the vertical distance from which reference points?
   o  (A) From the still water plane to the crest
   o  (B) Between water levels at one-quarter of the wave's length
   •  (C) From the crest to the trough
   o  (D) From the still water plane to the trough

   If choice C is selected set score to 1.

12. If the gyrocompass error is east, what describes the error and the correction to be made to gyrocompass headings to obtain true headings?
   o  (A) The readings are too low and the amount of the error must be subtracted from the compass to obtain true
   o  (B) The readings are too high and the amount of the error must be subtracted from the compass to obtain true
   o  (C) The readings are too high (large numerically) and the amount of the error must be added to the compass to obtain true
   •  (D) The readings are too low (small numerically) and the amount of the error must be added to the compass to obtain true

   If choice D is selected set score to 1.

13. Weather systems in the middle latitudes generally travel in which direction?
   o  (A) North to South
   •  (B) West to East
   o  (C) East to West
   o  (D) South East to North West

   If choice B is selected set score to 1.

14. On charts of U.S. waters, a magenta marking is NOT used for marking a __________.
   o  (A) prohibited area
   •  (B) 5-fathom curve
   o  (C) lighted buoy
   o  (D) radio beacon

   If choice B is selected set score to 1.
15. While on watch, you notice that the air temperature is dropping and is approaching the dew point. Which type of weather should be forecasted?

- (A) Fog
  - (B) Sleet
  - (C) Hail
  - (D) Heavy rain

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

16. Prior to reading an aneroid barometer, why should you tap the face lightly with your finger?

- (A) To expose any loose connections
  - (B) To demagnetize the metal elements
  - (C) To bring the pointer to its true position
  - (D) To contract and expand the glass face

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

17. Which describes a diurnal tide?

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

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

18. To measure distance on a Mercator chart between the parallels of LAT 34°30'N and LAT 31°30'N, which 30 mile scale should be used?

- (A) 32°15'N to 32°45'N
  - (B) 32°30'N to 33°00'N
  - (C) 32°45'N to 33°15'N
  - (D) 33°00'N to 33°30'N

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

19. You are steaming on a course of 253°T at 14 knots. At 2329 you observe a lighthouse bearing 282°T. At 2345 the lighthouse bears 300°T. What is your distance off at the second bearing?

- (A) 5.2 miles
  - (B) 4.3 miles
  - (C) 3.7 miles
  - (D) 5.9 miles

*If choice D is selected set score to 1.*
20. The best estimate of the wind direction at sea level can be obtained from observing the direction of the _________.

- (A) swells
- (B) vessel heading
- (C) cloud movement
- (D) waves

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

21. You are steaming west in the South Atlantic in an extratropical cyclonic storm, and the wind is dead ahead. According to the law of Buys Ballot, where does the center of low pressure lie?

- (A) Dead ahead of you
- (B) Dead astern of you
- (C) To the north of you
- (D) To the south of you

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

22. The velocity of the apparent wind can be less than the true wind and from the same direction, if certain conditions are present. One condition is that the _________.

- (A) ship's speed is more than the true wind velocity
- (B) true wind is on the beam
- (C) true wind is from dead astern
- (D) true wind is from dead ahead

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

23. What is the standard atmospheric pressure as measured in inches of mercury?

- (A) 29.92
- (B) 500.0
- (C) 760.0
- (D) 1013.2

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

24. You are underway on course 050°T and your maximum speed is 13 knots. The eye of a hurricane bears 100°T, 120 miles from your position. The hurricane is moving towards 275°T at 25 knots. What course should you steer at 13 knots to have the maximum CPA?

- (A) 339°
- (B) 333°
- (C) 326°
- (D) 320°

*If choice B is selected set score to 1.*
25. How many slack tidal currents usually occur each day on the east coast of the United States?

- (A) One
- (B) Two
- (C) Three
- (D) Four

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

26. In a weather report, which defines the term "visibility"?

- (A) The distance an observer can see with the unaided eye
- (B) The distance an observer can see a prominent object with a telescope or binoculars
- (C) The distance in miles at which prominent objects are identifiable by the unaided eye
- (D) The ability to identify an object at night utilizing binoculars

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

27. Brief, violent showers frequently accompanied by thunder and lightning are usually associated with __________.

- (A) winds shifting counterclockwise in the Northern Hemisphere
- (B) passage of a cold front
- (C) stationary high pressure systems
- (D) passage of a warm front

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

28. What causes variation in a compass?

- (A) Worn gears in the compass housing
- (B) Magnetism from the earth's magnetic field
- (C) Magnetism within the vessel
- (D) Lack of oil in the compass bearings

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

29. What is the approximate wavelength of an X Band Radar operating on a frequency of approximately 9.5 GHz?

- (A) 3 cm
- (B) 10 cm
- (C) 30 cm
- (D) 100 cm

*If choice A is selected set score to 1.*
30. You are steaming on a course of 327°T at 13 knots. At 0207 you observe a lighthouse bearing 020°T. At 0226 the lighthouse bears 042°T. What is your distance off at the second bearing?

- (A) 8.5 miles
- (B) 8.9 miles
- (C) 9.2 miles
- (D) 9.7 miles

If choice B is selected set score to 1.

31. Which defines the term charted depth?

- (A) The vertical distance from the chart sounding datum to the ocean bottom, plus the height of tide
- (B) The average height of all low waters at a place
- (C) The vertical distance from the chart sounding datum to the ocean bottom
- (D) The average height of water over a specified period of time

If choice C is selected set score to 1.

32. You are in a buoyed channel at night and pass a lighted buoy with an irregular characteristic. Who should you report this to?

- (A) The Coast Guard
- (B) The Corps of Engineers
- (C) The harbor master
- (D) The National Ocean Service

If choice A is selected set score to 1.

33. Which is TRUE of an aneroid barometer on a vessel?

- (A) It should be mounted in the passenger compartment
- (B) It should located in an air-conditioned area
- (C) It should be permanently mounted
- (D) It should be protected by a collision bulkhead

If choice C is selected set score to 1.

34. What is the characteristic of a quick flashing light?

- (A) Durations of light and darkness are equal
- (B) Shows quick flashes for about 5 seconds followed by a 1 second dark period
- (C) Shows not less than 60 flashes per minute
- (D) Shows groups of 2 or more flashes at regular intervals

If choice C is selected set score to 1.
35. Which term is used to describe the time interval between successive wave crests?
   
   o (A) Epoch  
   • (B) Period  
   o (C) Trough  
   o (D) Frequency  

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

36. All echo-sounders can measure the __________.

   o (A) average depth from waterline to hard bottom  
   o (B) actual depth of water  
   o (C) average depth of water to soft bottom  
   • (D) actual depth of water below keel  

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

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

   o (A) Saudi Arabia  
   o (B) Poland  
   • (C) Peru  
   o (D) Morocco  

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

38. A Doppler speed log indicates speed through the water __________.

   o (A) in the bottom return mode  
   o (B) only when there is no current  
   o (C) at all times  
   • (D) in the volume reverberation mode  

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

39. Which publication would describe the explosive anchorages in the ports on the east coast of the United States?

   o (A) Sailing Directions  
   • (B) Coast Pilot  
   o (C) Notice to Mariners  
   o (D) Pilot Rules for Inland Waters  

   *If choice B is selected set score to 1.*
40. 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 283° T, and the variation is 13°E. If the heading of your vessel at the time of the sighting is 278° per standard compass, what is the deviation?

- (A) 5°E
- (B) 5°W
- (C) 8°E
- (D) 8°W

If choice D is selected set score to 1.

41. In waters where the cardinal system is used where would you expect to find danger?

- (A) Lying to the east of an eastern quadrant buoy
- (B) Beneath or directly adjacent to the buoy
- (C) Lying to the south of a northern quadrant buoy
- (D) Lying to the south of an eastern quadrant buoy

If choice C is selected set score to 1.

42. In illustration D045NG below, what two shapes shown are used to indicate a preferred channel?

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

If choice C is selected set score to 1.

43. When your vessel is on or near the path of an approaching tropical storm the __________.

- (A) barometer falls
- (B) wind speed increases
- (C) wind direction remains steady
- (D) All of the above

If choice D is selected set score to 1.

44. The buoy symbol printed on your chart is leaning to the northeast. What does this indicate?

- (A) You should stay to the north or east of the buoy
- (B) Nothing special for navigational purposes
- (C) The buoy is a major lighted buoy
- (D) You should stay to the west or south of the buoy

If choice B is selected set score to 1.
45. On a working copy of a weather map, a cold front is represented by what color line?
   - (A) Red
   - (B) Alternating red and blue
   - (C) Blue
   - (D) Purple

   If choice C is selected set score to 1.

46. Which statement about gyrocompass error is TRUE?
   - (A) Any error will remain constant unless the compass is stopped and restarted.
   - (B) The sign (E or W) of the error will change with different headings of the ship.
   - (C) The amount of the error and the sign will generally be the same on all headings.
   - (D) Any error shown by a gyro repeater will be the same as the error of the master compass.

   If choice C is selected set score to 1.

47. You are on course 355°T and take a relative bearing of a lighthouse of 275°. What is the true bearing of the lighthouse?
   - (A) 080°
   - (B) 280°
   - (C) 270°
   - (D) 085°

   If choice C is selected set score to 1.

48. Under the IALA-B Buoyage System, which is TRUE of a buoy displaying a red light?
   - (A) It will be lettered
   - (B) It must have a radar reflector
   - (C) It should be left to starboard when entering from seaward
   - (D) It will show a light characteristic of Morse Code "A"

   If choice C is selected set score to 1.

49. How are the doldrums characterized?
   - (A) The frequent calms
   - (B) The clear skies
   - (C) The steady, light to moderate winds
   - (D) The low humidity

   If choice A is selected set score to 1.
50. Which wind results from a land mass cooling more quickly at night than an adjacent water area?
   o (A) Sea breeze
   • (B) Land breeze
   o (C) Mistral
   o (D) Coastal breeze

   If choice B is selected set score to 1.

51. The Light List indicates that a light has a nominal range of 8 miles and is 48 feet (14.6 meters) high. If the visibility is 6 miles and your height of eye is 35 feet (10.7 meters), at what approximate distance will you sight the light?
   • (A) 5.9 nm
   o (B) 15.0 nm
   o (C) 8.0 nm
   o (D) 12.4 nm

   If choice A is selected set score to 1.

52. A List of Lights entry (L Fl) is a single flashing light which shows a long flash of not less than which duration?
   o (A) 1.0 second duration
   o (B) 1.5 seconds duration
   • (C) 2.0 seconds duration
   o (D) 3.0 seconds duration

   If choice C is selected set score to 1.

53. The light rhythm of Morse (A) is shown on which buoy(s)
   o (A) Preferred channel buoys
   o (B) Special marks
   o (C) Starboard or port side buoys
   • (D) Safe water buoys

   If choice D is selected set score to 1.

54. You take a bearing of 043° and 169° of two objects. What bearing of a third object will give the best fix?
   o (A) 356°
   o (B) 144°
   • (C) 102°
   o (D) 201°

   If choice C is selected set score to 1.
55. Which defines the term relative humidity?

- (A) The maximum vapor content the air is capable of holding
- (B) The relation of the moisture content of the air to barometric pressure
- (C) The maximum vapor content the air is capable of holding
- (D) The ratio of the actual vapor content at the current temperature to the air's vapor holding capability

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

56. You are entering an east coast port and see a buoy with a yellow triangle painted on it. What does the symbol indicate?

- (A) The buoy is a special mark
- (B) The buoy designates a sharp turn in the channel
- (C) You are in the vicinity of the ICW
- (D) The buoy is off station

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

57. Which name is given to the pressure-sensitive element of an aneroid barometer?

- (A) Constant pressure capsule
- (B) Pressure bellows
- (C) Column of mercury
- (D) Sylphion cell

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

58. You are on course 277°T and take a relative bearing of a lighthouse of 045°. What is the true bearing to the lighthouse?

- (A) 038°
- (B) 232°
- (C) 315°
- (D) 322°

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

59. You are underway in a vessel with a draft of 7.0 feet (2.1 meters). The charted depth for your position is 9 fathoms. You compute the height of tide to be +3.0 feet (0.9 meters). You determine the depth of the water beneath your keel to be __________.

- (A) 41 feet (12.6 meters)
- (B) 50 feet (15.3 meters)
- (C) 64 feet (19.6 meters)
- (D) 32 feet (9.8 meters)

*If choice B is selected set score to 1.*
60. A dead reckoning (DR) plot __________.
   - (A) must be plotted using magnetic courses
   - (B) is most useful when in sight of land
   - (C) may be started at an assumed position
   - (D) ignores the effect of surface currents

   If choice D is selected set score to 1.

61. The velocity of the apparent wind can be more than the true wind, and come from the same direction, if certain conditions are present. One condition is that the __________.
   - (A) true wind must be from dead astern
   - (B) true wind velocity must be faster than the ship’s speed
   - (C) true wind must be from dead ahead
   - (D) ship’s speed must be less than the true wind velocity

   If choice C is selected set score to 1.

62. Which theoretical minimum number of measurements from satellites does a GPS receiver need in order to provide an exact three-dimensional position?
   - (A) Five
   - (B) Four
   - (C) Three
   - (D) Two

   If choice B is selected set score to 1.

63. The most dangerous form of icing encountered at sea is formed by which of the following?
   - (A) Sea spray
   - (B) Rime
   - (C) Freezing rain
   - (D) Hail

   If choice A is selected set score to 1.

64. An orange and white buoy indicating a vessel-exclusion area will be marked with what symbol?
   - (A) Open-faced diamond
   - (B) Square
   - (C) Diamond with a cross
   - (D) Circle

   If choice C is selected set score to 1.
65. The Light List indicates that a light has a nominal range of 14 miles and is 26 feet high. If the visibility is 14 miles and your height of eye is 20 feet, at which approximate distance will you sight the light?

- (A) 7.5 miles
- (B) 11.2 miles
- (C) 14.0 miles
- (D) 18.1 miles

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

66. Which causes the Earth's irregular heating?

- (A) The seasons
- (B) The geography
- (C) The time of day
- (D) All of the above

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

67. Hurricanes may move in any direction. However, it is rare and generally of short duration when a hurricane in the Northern Hemisphere moves in which direction?

- (A) Southeast
- (B) North
- (C) Northeast
- (D) West or northwest

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

68. When outbound from a U.S. port, what does a buoy displaying a flashing red light indicate?

- (A) A junction with the preferred channel to the left
- (B) A wreck to be left on the vessel’s starboard side
- (C) A sharp turn in the channel to the right
- (D) The port side of the channel

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

69. Which item in illustration D034NG below shows an occulting light?

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

*If choice B is selected set score to 1.*
70. A position obtained by taking lines of position from one object at different times and advancing them to a common time is a(n) __________.

- (A) running fix
- (B) fix
- (C) estimated position
- (D) dead-reckoning position

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