

U.S.C.G. Merchant Marine Exam
Master/Chief Mate of Unlimited Tonnage
Q105 Navigation General – Near Coastal
(Sample Examination)

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

1. How are chart legends which indicate a conspicuous landmark printed?

- A. In italics
- B. With underlined letters
- C. In boldfaced print
- D. In capital letters

Correct answer: D

2. What is the purpose of the "reference hand" on an aneroid barometer?

- A. To adjust the barometer
- B. To indicate any change in the reading of the barometer
- C. To provide a correction for height above sea level
- D. To provide a correction for temperature changes

Correct answer: B

3. Charts should be corrected by using information published in which text?

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

Correct answer: B

4. 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°

Correct answer: B

5. You are on course 042°T. To check the course of your vessel you should observe a celestial body on which bearing?

- A. 090°
- B. 132°
- C. 180°
- D. 222°

Correct answer: B

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

Correct answer: A

7. By what means are indications of the master gyrocompass sent to remote repeaters?
- A. by transmitter
 - B. by azimuth motor
 - C. by phantom element
 - D. by follow-up system

Correct answer: A

8. Which is TRUE as the temperature of the air reaches the dew point?
- A. Fog may form
 - B. Rain must develop
 - C. It begins to snow
 - D. Water freezes

Correct answer: A

9. What happens to the intensity of a hurricane as it reaches higher latitudes and cooler waters?
- A. Remains the same
 - B. Increases
 - C. Decreases
 - D. None of the above

Correct answer: C

10. When navigating in high latitudes and using a chart based on a Lambert conformal projection, which is TRUE?
- A. The chart should not be used outside of the standard parallels
 - B. The course angle is measured at the mid-longitude of the track line
 - C. The distance cannot be measured directly from the chart
 - D. A straight line drawn on the chart approximates a great circle

Correct answer: D

11. What is the major limitation in using the Sight Reduction Tables for Air Navigation Volume I (Pub. No. 249) for star sights?

- A. Only first magnitude stars are tabulated.
- B. Sightings must be made at even time increments to benefit from the tables.
- C. More accuracy is needed for celestial observations on board ship than what is tabulated.
- D. Only certain stars are included and sightings must be limited to those stars.

Correct answer: D

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

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

Correct answer: D

13. An electronic depth finder operates on which principle?

- A. Radio signals reflect from a solid surface
- B. Pressure increases with depth
- C. Sound waves travel at a constant speed through water
- D. Radar signals travel at a constant speed through water

Correct answer: C

14. A List of Lights entry (L Fl) is a single flashing light which shows a long flash of not less than which duration?

- A. 1.0 second duration
- B. 1.5 seconds duration
- C. 2.0 seconds duration
- D. 3.0 seconds duration

Correct answer: C

15. In the Northern Hemisphere, where will the largest waves or swells created by a typhoon or hurricane be located?

- A. Directly behind the storm center
- B. Behind and to the left of its course
- C. In the southeast quadrant of the storm
- D. Forward and to the right of its course

Correct answer: D

16. Which describes the visible range marked on charts for lights?

- A. The minimum distance at which the light may be seen with infinite visibility
- B. The maximum distance at which a light may be seen in clear weather with 10 miles visibility
- C. The maximum distance the light may be seen restricted by the height of the light and the curvature of the earth
- D. The minimum distance at which the light may be seen based on a 12-mile distance to visible horizon

Correct answer: B

17. You wish to measure the distance on a Mercator chart between a point in latitude $43^{\circ}30'N$ and a point in latitude $40^{\circ}30'N$. To measure 30 miles at a time, where should you set the points of the dividers to obtain the most accurate measurement?

- A. $41^{\circ}30'$ and $42^{\circ}00'$
- B. $41^{\circ}45'$ and $42^{\circ}15'$
- C. $42^{\circ}00'$ and $42^{\circ}30'$
- D. $42^{\circ}15'$ and $42^{\circ}45'$

Correct answer: B

18. Brief, violent showers frequently accompanied by thunder and lightning are usually associated with _____.

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

Correct answer: C

19. Which type of weather could you expect soon after seeing "hook" or "comma" shaped cirrus clouds?

- A. Rain with the approach of a warm front
- B. Continuing fog and rain
- C. The formation of a tropical depression
- D. Clearing with the approach of a cold front

Correct answer: A

20. You take a bearing of 176° of a lighthouse. Which bearing of another object would give the best fix?

- A. 079°
- B. 151°
- C. 176°
- D. 292°

Correct answer: A

21. In the North Sea area, you sight a buoy showing a quick white light with 6 flashes, followed by one long flash at 15 second intervals. Which of the four topmarks shown in illustration D030NG below would be fitted to this buoy?

- A. A
- B. B
- C. C
- D. D

Correct answer: A

22. On the pole side of the high-pressure belt in each hemisphere, the pressure diminishes. The winds along these gradients are diverted by the Earth's rotation toward the east. What is the name of these winds?

- A. The geostrophic winds
- B. The southeast trades
- C. The prevailing westerlies
- D. The northeast trade winds

Correct answer: C

23. Which compensates for induced magnetism in the horizontal soft iron of a vessel?

- A. Magnets in trays inside the binnacle
- B. A single vertical magnet under the compass
- C. The Flinders bar
- D. Iron spheres mounted on the binnacle

Correct answer: D

24. Which level of accuracy can be obtained utilizing the U.S. Coast Guard's Maritime Differential GPS in an established coverage area?

- A. 10 meters
- B. 20 meters
- C. 50 meters
- D. 92 meters

Correct answer: A

25. Which is the difference between the DR position and a fix, both of which have the same time?

- A. Leeway
- B. Variation
- C. Deviation
- D. Current

Correct answer: D

26. In illustration D051NG below, why was the position labeled "E" plotted?

- A. A dead reckoning position is plotted for each speed change
- B. The vessel's position was fixed at 1145
- C. The position is a running fix
- D. A dead reckoning position is plotted within a half-hour of each course change

Correct answer: A

27. Which is the reference datum used in determining the heights of land features on most charts?

- A. Mean low water
- B. Half-tide level
- C. Mean sea level
- D. Mean high water

Correct answer: D

28. Which general weather conditions should you expect to find in a low-pressure system?

- A. Gradual clearing and cooler temperatures
- B. Scattered clouds at high elevations
- C. Precipitation and cloudiness
- D. Fair weather

Correct answer: C

29. What is the standard atmospheric pressure in millibars?

- A. 760.0
- B. 938.9
- C. 1000.0
- D. 1013.2

Correct answer: D

30. When utilizing a Pacific Coast chart, which is the reference plane of soundings?

- A. Mean low water springs
- B. Mean lower low water
- C. Lowest normal low water
- D. Mean lowest water

Correct answer: B

31. Which type of precipitation occurs only in thunderstorms with strong convection currents that convey raindrops above and below the freezing level?

- A. Hail
- B. Rime
- C. Sleet
- D. Freezing rain

Correct answer: A

- 32.** You are on course 344°T and take a relative bearing of a lighthouse of 090° . What is the true bearing to the lighthouse?
- A. 016°
 - B. 074°
 - C. 254°
 - D. 270°

Correct answer: B

- 33.** The velocity of the wind, its steady direction, and the amount of time it has blown determines what about a wind driven current?
- A. Its deflection
 - B. Its speed
 - C. Its temperature
 - D. Its density

Correct answer: B

- 34.** Which is the region containing $3/4$ of the mass of the atmosphere and to which are confined such phenomena as clouds, storms, precipitation and changing weather conditions?
- A. The tropopause
 - B. The troposphere
 - C. The stratopause
 - D. The stratosphere

Correct answer: B

- 35.** Entering a harbor, you take a bearing on a range and get 338° per gyrocompass (pgc). The true bearing from the chart is 340°T . Variation for the area is 14°E . Your course is 329° per standard magnetic compass (psc) and 338°pgc . What is the deviation on this heading?
- A. 3°E
 - B. 3°W
 - C. 5°E
 - D. 5°W

Correct answer: B

- 36.** You are underway on course 160°T while turning for an engine speed of 10 knots. The current is 210°T at 0.9 knots. What is the speed being made good?
- A. 10.7 knots
 - B. 11.0 knots
 - C. 11.6 knots
 - D. 12.3 knots

Correct answer: A

- 37.** You will find daily information about the duration of slack water in a port on the Atlantic Coast in which publication?
- A. Tidal Current Tables
 - B. American Practical Navigator
 - C. Tide Tables
 - D. Sailing Directions

Correct answer: A

- 38.** In the North Sea area, you sight a buoy showing an uninterrupted quick-flashing white light. Which of the four topmarks shown in illustration D031NG below will this buoy be fitted with under the IALA Buoyage system?
- A. A
 - B. B
 - C. C
 - D. D

Correct answer: B

- 39.** You are inbound in a channel marked by a range. The range line is 216°T . You are steering 213°T and have the range in sight as shown in illustration D048NG below. Which action should you take?
- A. Continue on the present heading until the range is in line then alter course to the right.
 - B. Immediately alter course to the left to bring the range in line.
 - C. Immediately alter course to the right to bring the range in line.
 - D. Immediately alter course to 216°T if the range is closing.

Correct answer: C

- 40.** Which term is given to the mechanical lifting of air by the upslope slant of the terrain?
- A. Vertical lifting
 - B. Convective lifting
 - C. Topographic lifting
 - D. Advective lifting

Correct answer: C

- 41.** Which indication on the barometer is most meaningful in forecasting weather?
- A. The relative humidity
 - B. The direction and rate of change of barometric pressure
 - C. The words "Fair -- Change -- Rain"
 - D. The actual barometric pressure

Correct answer: B

42. How long would a steady wind need to blow in order to create a wind driven current?

- A. 2 hours
- B. 6 hours
- C. 12 hours
- D. 18 hours

Correct answer: C

43. Yesterday your chronometer read 03h 01m 56s at the 1500 GMT time tick. Today your chronometer read 03h 01m 58s at the 1500 GMT time tick. What is the chronometer error?

- A. 01m 58s fast
- B. -2s
- C. +2s
- D. 03h 01m 58s fast

Correct answer: A

44. Which defines the term relative humidity?

- A. The ratio of the actual vapor content at the current temperature to the air's vapor holding capability
- B. The maximum vapor content the air is capable of holding
- C. The relation of the moisture content of the air to barometric pressure
- D. The maximum vapor content the air is capable of holding at 70 degrees

Correct answer: A

45. The Brazil Current flows in which general direction?

- A. Southwesterly
- B. Northwesterly
- C. Northerly
- D. Southeasterly

Correct answer: A

46. At 0000 you fix your position and plot a new DR track line. At 0200 you again fix your position, and it is 0.5 mile east of your DR. Which statement is TRUE?

- A. The current is westerly at 0.5 knot.
- B. The current cannot be determined.
- C. The drift is 0.25 knot.
- D. You must increase speed to compensate for the current.

Correct answer: C

47. What daymark has NO lateral significance?

- A. Green square
- B. Red triangle with a green horizontal stripe
- C. Green and white diamond
- D. Red triangle

Correct answer: C

48. Lines drawn through points on the Earth having the same atmospheric pressure are known by which term?

- A. Seismics
- B. Isobars
- C. Millibars
- D. Isothermal

Correct answer: B

49. What is the color scheme of navigational marks used for informational or regulatory purposes?

- A. Solid yellow
- B. Green and red horizontally-banded
- C. White with orange geometric shapes
- D. Red and white vertically-striped

Correct answer: C

50. Which action is the safest and most prudent procedure to follow while navigating in the vicinity of a tropical cyclone?

- A. Batten down and prepare to ride out the storm
- B. Continue to navigate farther from the coast
- C. Always navigate towards the coast by the most direct route
- D. Take positive steps to avoid it if possible

Correct answer: D

51. Which statement is TRUE concerning equatorial tides?

- A. They are used as the basis for the vulgar establishment of the port.
- B. They occur when the Moon is at maximum declination north or south.
- C. The difference in height between consecutive high or low tides is at a minimum.
- D. They occur when the Sun is at minimum declination north or south.

Correct answer: C

52. Which describes the level of database information which cannot be removed from the ECDIS display and consists of information which is required at all times in all geographic areas and under all circumstances?

- A. System electronic nautical chart
- B. Standard display information
- C. Chart display information
- D. Display base information

Correct answer: D

- 53.** To make sure of getting the full advantage of a favorable current, you should reach an entrance or strait at which time in relation to the predicted time of the favorable current?
- A. One hour after
 - B. 30 minutes before flood, one hour after an ebb
 - C. At the predicted time
 - D. 30 minutes before

Correct answer: D

- 54.** All of the following can be found on a Pilot Chart EXCEPT information concerning which item?
- A. Percentage of frequency of wave heights
 - B. Amounts of precipitation
 - C. Percentage of poor visibility conditions
 - D. Sea surface temperatures

Correct answer: B

- 55.** The owner or Master of a towing vessel that is operating within a Vessel Traffic Service (VTS) area must report specific information to the service. Which of the following choices is not required to be reported?
- A. Any characteristics of the vessel that affect its maneuverability
 - B. A shortage of personnel, lack of charts, maps or other required publications
 - C. The type of credential he/she holds and its serial number
 - D. Any malfunction of propulsion machinery, steering gear, radar, gyrocompass or depth-sounder, if installed

Correct answer: C

- 56.** Your vessel is on course $150^{\circ}T$, speed 17 knots. The apparent wind is from 40° off the starboard bow, speed 15 knots. What is the speed of the true wind?
- A. 9.0 knots
 - B. 10.2 knots
 - C. 11.0 knots
 - D. 12.0 knots

Correct answer: C

- 57.** When the moon is new or full, which type of tides occur?
- A. Spring
 - B. Neap
 - C. Apogean
 - D. Diurnal

Correct answer: A

- 58.** The owner or Master of a towing vessel shall ensure that each person that directs and controls the movement of the vessel can accomplish all of the following EXCEPT _____.
- A. enter all required test and inspection results in the vessel's log or other record carried on board
 - B. reduce speed only where local speed limits are posted
 - C. adjust speed with due regard for the weather and visibility
 - D. evaluate the danger of each closing visual or radar contact

Correct answer: B

- 59.** A safe water daymark has what shape?
- A. Diamond
 - B. Octagonal
 - C. Circular
 - D. Triangular

Correct answer: B

- 60.** Ascending and descending air masses with different temperatures is part of an important heat transmitting process in our atmosphere. Which term is given to this process?
- A. Convection
 - B. Barometric inversion
 - C. Radiation
 - D. Conduction

Correct answer: A

- 61.** When adjusting a magnetic compass for error, which is TRUE concerning the deviation table?
- A. Construct the deviation table before the quadrantal correctors are placed on the compass
 - B. Construct the deviation table after correcting for variation
 - C. Construct the table after adjusting the fore-and-aft permanent magnets
 - D. Construct the deviation table before correcting for any deviation

Correct answer: C

- 62.** When trying to sight a lighthouse you notice a glare from a town in the background. How does this affect the range at which the light may be sighted?
- A. Increased if the light is red or green due to contrast with the glare
 - B. Considerably reduced and difficult to distinguish
 - C. Unchanged
 - D. Increased slightly due to extra lighting

Correct answer: B

- 63.** While navigating in fog off a coastline of steep cliffs, you hear the echo of the ship's fog horn 4 1/2 seconds after the signal was sounded. What is the distance to the shore?
- A. 405 yards
 - B. 628 yards
 - C. 730 yards
 - D. 825 yards

Correct answer: D

- 64.** When within 300 miles of a named tropical storm or hurricane, it is standard practice to send weather reports at which time interval?
- A. Every hour
 - B. Every 8 hours
 - C. Every 6 hours
 - D. Every 3 hours

Correct answer: D

- 65.** You swung ship and compared the magnetic compass against the gyrocompass to find deviation. Gyro error is 2°E. The variation is 8°W. Find the deviation on a magnetic compass heading of 143°.

NP-0110	
HEADING	
PSC	PGC
030.5°	020°
061.5°	050°
092.0°	080°
122.5°	110°
152.0°	140°
181.0°	170°
210.0°	200°
239.5°	230°
269.0°	260°
298.0°	290°
327.5°	320°
358.5°	350°

- A. 2.0°W
- B. 1.5°W
- C. 0.5°W
- D. 0.0°

Correct answer: A

66. Radar makes the most accurate determination of the _____.

- A. size of a target
- B. shape of a target
- C. distance to a target
- D. direction of a target

Correct answer: C

67. A latitude line will be obtained by observing a body _____.

- A. on the celestial horizon
- B. at lower transit
- C. on the Greenwich meridian
- D. on the prime vertical

Correct answer: B

68. You are steaming on a course of 246°T at 17 knots. At 2107 you observe a lighthouse bearing 207°T. At 2119 the lighthouse bears 179°T. What is your distance off at the second bearing?

- A. 4.6 miles
- B. 4.2 miles
- C. 3.9 miles
- D. 5.1 miles

Correct answer: A

69. As a warm front approaches how does barometric pressure change?

- A. Pressure falls
- B. Pressure is steady
- C. Pressure rises
- D. Pressure is uncertain

Correct answer: A

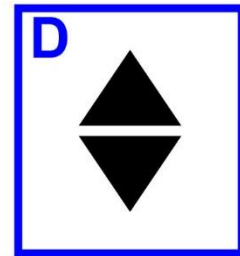
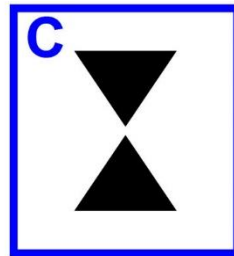
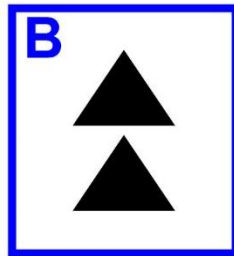
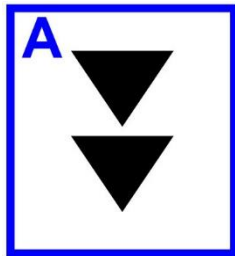
70. If the current and wind are in opposite directions, what does the sea surface indicate?

- A. The surface indicates a greatly reduced wind speed
- B. The surface indicates a lower wind speed than what really exists
- C. The surface indicates a higher wind speed than what really exists
- D. The surface does not change, each cancels the other

Correct answer: C



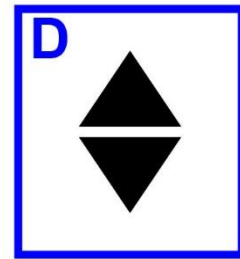
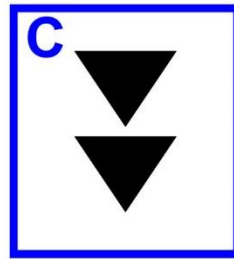
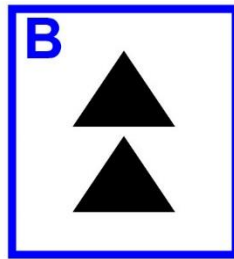
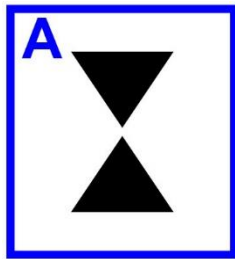
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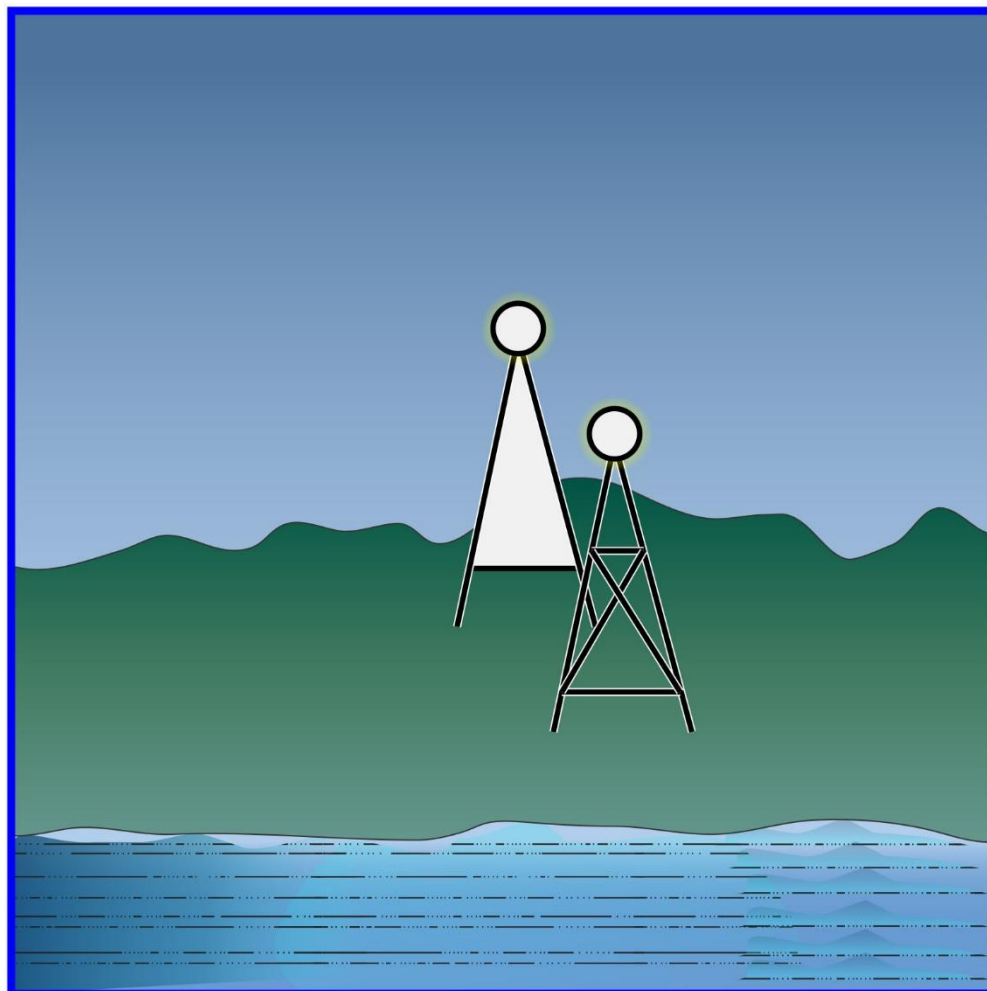


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