U.S.C.G. Merchant Marine Exam

Master Less than 500-1600 Gross Registered Tons

Q124 Navigation General – Oceans

(Sample Examination)
Choose the best answer to the following Multiple Choice questions.

1. Which feature, when set to zero, might allow a GPS unit to have an accuracy equivalent to Precise Positioning Service receiver capability?

   o (A) Auto-correlation
   o (B) Selective Availability
   o (C) Transit
   o (D) Anti-spoofing

   If choice B is selected set score to 1.

2. You are outbound in a channel marked by a range astern. The range line is 273° T. You are steering 090° T and have the range in sight as shown in illustration D047NG below. What action should you take?

   o (A) Come left until the range comes in line than alter course to 093° T.
   o (B) Come right to close the range then when on the range steer 093° T.
   o (C) Come left until the range comes in line then alter course to 087° T.
   o (D) Come right to 093° T.

   If choice B is selected set score to 1.

3. A sylphon cell is a part of which instrument?

   o (A) A thermograph
   o (B) A barograph
   o (C) A hygrometer
   o (D) A maximum thermometer

   If choice B is selected set score to 1.

4. Which type of cloud formation should be of immediate concern to small craft operators?

   o (A) Nimbostratus
   o (B) Cumulonimbus
   o (C) Altostratus
   o (D) Cirrus

   If choice B is selected set score to 1.

5. In the United States, who broadcasts the short-range radio navigational warnings?

   o (A) The Coast Guard
   o (B) The Corps of Engineers
   o (C) The harbor master of the nearest port
   o (D) NOAA

   If choice A is selected set score to 1.
6. You are in a channel inbound from sea. A daymark used to mark a channel junction, when the preferred channel is to port will have the shape indicated by what letter in illustration D045NG below?

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

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

7. You are running parallel to the coast and take a running fix using bearings of the same object. Which is TRUE if you are making less speed than used for the running fix, in relation to the position indicated by the fix?

- (A) Your vessel will be on the track line behind the fix
- (B) Your vessel will be on the track line ahead of the fix
- (C) Your vessel will be farther from the coast
- (D) Your vessel will be closer to the coast

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

8. Sometimes foreign charts are reproduced by NGA. On such a chart a wire dragged (swept) area may be shown in purple or which other color?

- (A) Magenta
- (B) Yellow
- (C) Red
- (D) Green

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

9. How can the accuracy of an azimuth circle be checked?

- (A) sighting a terrestrial range in line and comparing the observed bearing against the charted bearing
- (B) ensuring that the alignment marks on the inner face of the circle are in line with those on the repeater on relative bearings of 000° and 090°
- (C) aligning the relative bearing markings so that 000° is on the lubber's line and the line of sight passes over the center of the compass
- (D) comparing observed azimuths at different altitudes with computed values at the times of observation to see if the difference is constant

*If choice D is selected set score to 1.*
10. Which is a characteristic of anticyclones?
   - (A) Overcast skies
   - (B) Gustiness and continuous precipitation
   - (C) High winds and cloudiness
   - (D) Dry, fair weather

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

11. 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.*

12. Green lights may appear on which buoys?
   - (A) Horizontally banded buoys
   - (B) Yellow buoys
   - (C) Spherical buoys
   - (D) Vertically striped buoys

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

13. What is the major problem with taking high altitude sun observations?
   - (A) Possible errors due to unusual refraction may exist.
   - (B) It is difficult to establish the point where the sextant is vertical to the horizon.
   - (C) Rapidly changing altitudes make it difficult to get an accurate altitude.
   - (D) The tables are not as accurate due to inherent errors in the spherical triangle at high altitudes.

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

14. Tropical cyclones normally form within which of the following belts of latitude?
   - (A) 15° to 30°
   - (B) 5° to 15°
   - (C) 45° to 60°
   - (D) 30° to 45°

   *If choice B is selected set score to 1.*
15. Which term is used to describe the line connecting the points of the earth's surface where there is no magnetic dip?

- (A) The isopor
- (B) The agonic line
- (C) The isodynamic
- (D) The magnetic equator

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

16. The average height of the surface of the sea for all stages of the tide over a 19 year period is known by which term?

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

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

17. Which wind pattern has the most influence over the movement of frontal weather systems over the North American continent?

- (A) Dominant southwesterly flow
- (B) Subpolar easterlies
- (C) Northeast trades
- (D) Prevailing westerlies

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

18. At 0000 you fix your position and change course to 270°T. At 0030 you again fix your position, and it is 0.5 mile east of your DR. Which statement is TRUE?

- (A) The set is 270°, drift 0.5 knot.
- (B) The set is 090°, drift 0.5 knot.
- (C) The set is 090°, drift 1.0 knot.
- (D) The set is 270°, drift 1.0 knot.

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

19. A NAVAREA warning carries the following number; 1986/87 (11). Which statement is TRUE?

- (A) This is warning number 1986 issued in 1987, and it affects sub-region 11.
- (B) The subject of this warning first appeared in 1986; this warning is in 1987 and is the eleventh on this topic.
- (C) This warning is valid in 1986 and 1987 and is the eleventh two-year warning.
- (D) The warning was issued in 1986; the 87th sequentially numbered warning and broadcast 11 times.

*If choice A is selected set score to 1.*
20. Which is TRUE of Radiation fog?

- (A) It is thinnest at the surface
- (B) It is formed by a temperature inversion
- (C) It always forms over water
- (D) It dissipates during the evening

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

21. The daily path of a celestial body that is parallel to the celestial equator is the __________.

- (A) altitude circle
- (B) diurnal circle
- (C) hour circle
- (D) vertical circle

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

22. You swung ship and compared the magnetic compass against the gyro compass to find deviation. Gyro error is 2°E. The variation is 8°W. Find the deviation on a magnetic compass heading of 234°.

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<td>358.5°</td>
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- (A) 2.5°W
- (B) 2.5°E
- (C) 1.0°W
- (D) 0.5°E

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

23. Where would you expect to find channels marked with the IALA-A Buoyage System?

- (A) Australia
- (B) the Philippines
- (C) Republic of Korea
- (D) Chile

*If choice A is selected set score to 1.*
24. In order to remove side error from a sextant, which adjustment can be made?

- (A) Adjust the horizon glass to make it perpendicular to the index mirror with the index set at zero
- (B) Adjust the horizon glass to make it parallel to the horizon mirror with the index set at zero
- (C) Adjust the telescope to make it parallel to the sextant frame
- (D) Adjust the horizon glass to make it perpendicular to the sextant frame

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

25. Atmospheric pressure may be measured with which instrument?

- (A) A psychrometer
- (B) An aneroid barometer
- (C) A Thermometer
- (D) A refractor

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

26. The precession of the equinoxes occurs in which direction?

- (A) southerly direction
- (B) northerly direction
- (C) westerly direction
- (D) easterly direction

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

27. Which type of frontal passage is associated with a relatively narrow band of precipitation?

- (A) A stationary front
- (B) A warm front
- (C) A cold front
- (D) None of the above

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

28. Which condition(s) is(are) necessary for the formation of dew?

- (A) Clear skies
- (B) Moderate wind
- (C) A surface warmer than the dew point of the air
- (D) Available nuclei in the air

*If choice A is selected set score to 1.*
29. You take a bearing of 264° of a lighthouse. What bearing of another object would give the best fix?

- (A) 289°
- (B) 081°
- (C) 120°
- (D) 350°

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

30. What does the expression "the air is saturated" mean?

- (A) The relative humidity is 100%
- (B) The precipitation has commenced
- (C) The cloud cover is 100%
- (D) The vapor pressure is at its minimum for the prevailing temperature

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

31. Which chart has a scale of 1:45,000

- (A) A harbor chart
- (B) A general chart
- (C) A sailing chart
- (D) A coast chart

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

32. You are enroute to assist vessel A. Vessel A is underway at 5.5 knots on course 033°T, and bears 284°T at 43 miles from you. What is the course to steer and running time at 16 knots to intercept vessel A?

- (A) 265°, 2h 32m
- (B) 265°, 3h 13m
- (C) 303°, 2h 32m
- (D) 303°, 3h 13m

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

33. On an Atlantic Ocean voyage from New York to Durban, South Africa, which is TRUE of the Agulhas Current?

- (A) It will be a following current to your vessel
- (B) It will be an onshore current to your vessel
- (C) It will be a head current to your vessel
- (D) It will be an offshore current to your vessel

*If choice C is selected set score to 1.*
34. Atmospheric pressure at sea level is equal to __________.
   - (A) 1013.25 millibars
   - (B) 29.92 inches of mercury
   - (C) 14.7 pounds per square inch
   - (D) All of the above

   If choice D is selected set score to 1.

35. Which weather change accompanies the passage of a cold front in the Northern Hemisphere?
   - (A) A line of cumulonimbus clouds
   - (B) Steady dropping of barometric pressure
   - (C) Steady precipitation, gradually increasing in intensity
   - (D) Wind shift from northeast, clockwise to southwest

   If choice A is selected set score to 1.

36. A special mark (yellow buoy), if lighted, may exhibit which light rhythm?
   - (A) Occulting
   - (B) Morse "A"
   - (C) Equal interval
   - (D) Flashing

   If choice D is selected set score to 1.

37. What do the magnets placed in horizontal trays in the compass binnacle compensate for?
   - (A) Magnetic fields caused by electrical currents in the vicinity
   - (B) Induced magnetism in the vessel's horizontal soft iron
   - (C) Change in the magnetic field when the vessel inclines from vertical
   - (D) Permanent magnetism of the vessel

   If choice D is selected set score to 1.

38. While navigating in fog off a coastline of steep cliffs, you hear the echo of the ship's fog horn 2 seconds after the signal was sounded. What is the distance to the shore?
   - (A) 280 yards
   - (B) 320 yards
   - (C) 360 yards
   - (D) 140 yards

   If choice C is selected set score to 1.
39. When do neap tides occur?
   - (A) At the start of spring, when the Sun is nearly over the equator
   - (B) When the Sun and Moon are at approximately 90° to each other, as seen from the Earth
   - (C) Only when the Sun and Moon are on the same sides of the Earth and are nearly in line
   - (D) When the Sun, Moon, and Earth are nearly in line, regardless of alignment order

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

40. You are on course 138°T. To check the latitude of your vessel you should observe a celestial body on which bearing?
   - (A) 138°
   - (B) 000°
   - (C) 318°
   - (D) 270°

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

41. Your vessel is proceeding up a channel, and you see a pair of range lights that are in line ahead. The chart indicates that the direction of this pair of lights is 311°T, and the variation is 8°E. If the heading of your vessel at the time of the sighting is 305° per standard magnetic compass, what is the correct deviation?
   - (A) 2°E
   - (B) 2°W
   - (C) 6°E
   - (D) 6°W

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

42. You desire to make good a true course of 132°. The variation is 10°W, magnetic compass deviation is 5°E, and gyrocompass error is 5°W. A northeast by east wind produces a 5° leeway. What is the course to steer per standard magnetic compass to make the true course good?
   - (A) 142°psc
   - (B) 135°psc
   - (C) 137°psc
   - (D) 132°psc

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

43. On a voyage from Halifax, N.S., to Dakar, West Africa, the Canary Current will __________.
   - (A) offer resistance in the form of a head current
   - (B) furnish additional thrust in the form of a fair or following current
   - (C) set the vessel to the right
   - (D) set the vessel to the left

   *If choice C is selected set score to 1.*
44. During one synodic rotation, a body makes one complete turn relative to the __________.
   - (A) Earth
   - (B) Sun
   - (C) vernal equinox
   - (D) stars

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

45. Which is the term given to the time required for a lighted aid to complete a full cycle of light changes?
   - (A) Set
   - (B) Frequency
   - (C) Period
   - (D) Function

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

46. The summer solstice is the point where the Sun is at __________.
   - (A) 0° declination going to southerly declinations
   - (B) maximum declination north
   - (C) 0° declination going to northerly declinations
   - (D) maximum declination south

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

47. You are steering 173°T, and a light is picked up dead ahead at a distance of 13.9 miles at 0054. You change course to pass the light 4.5 miles off abeam to port. If you are making 21 knots, what is your ETA at the position 4.5 miles off the light?
   - (A) 0122
   - (B) 0134
   - (C) 0131
   - (D) 0125

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

48. 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) Radiation
   - (B) Convection
   - (C) Conduction
   - (D) Barometric inversion

   *If choice B is selected set score to 1.*
49. What is the standard time meridian for zone description -1?
   - (A) 0°
   - (B) 7 1/2°W
   - (C) 7 1/2°E
   - (D) 15°E

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

50. Which is another name for Universal time (UT)?
   - (A) Sidereal time
   - (B) Greenwich mean time
   - (C) Atomic time
   - (D) Ephemeris time

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

51. 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

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

52. You are on course 201°T. To check the speed of your vessel you should observe a celestial body on which bearing?
   - (A) 180°
   - (B) 111°
   - (C) 201°
   - (D) 090°

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

53. On 25 December you observe the Sun's lower limb. The sextant altitude (hs) is 4°06.9'. The height of eye is 47 feet and the index error is 1.6' on the arc. The temperature is 19°F and the barometer reads 1030.8 millibars. What is the observed altitude (Ho)?
   - (A) 3°57.4'
   - (B) 4°01.9'
   - (C) 4°02.5'
   - (D) 4°03.4'

   *If choice B is selected set score to 1.*
54. The direction a vessel is pointed at any given time is the __________.

- (A) course
- (B) track
- (C) heading
- (D) course over the ground

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

55. 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 northeast trade winds
- (B) The prevailing westerlies
- (C) The geostrophic winds
- (D) The southeast trades

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

56. You are enroute to assist vessel A. Vessel A is underway at 6 knots on course 133°T, and bears 042°T, 105 miles from you. What is the time to intercept if you make 10 knots?

- (A) 12h 30m
- (B) 12h 44m
- (C) 12h 58m
- (D) 13h 22m

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

57. Which of the following is the reference point to measure an azimuth angle for a body?

- (A) body's meridian
- (B) zenith distance
- (C) observer's meridian
- (D) Greenwich meridian

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

58. Which term is defines the ocean bottom that extends from the shoreline out to an area where there is a marked change in slope to a greater depth?

- (A) Continental shelf
- (B) Offshore terrace
- (C) Borderland
- (D) Abyssal plain

*If choice A is selected set score to 1.*
59. You are on course 222°T and take a relative bearing of a lighthouse of 025°. What is the true bearing to the lighthouse?

- (A) 197°
- (B) 335°
- (C) 247°
- (D) 315°

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

60. You are planning a voyage from San Francisco to Japan. Which publication contains information on the ocean routes?

- (A) Sailing Directions (Planning Guide)
- (B) Coast Pilot
- (C) Sailing Directions (Enroute)
- (D) World Port Index

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

61. Which of the following describes gyrocompass repeaters which reproduce the indications of the master gyrocompass?

- (A) They are hand operated
- (B) They are accurate only in the Polar regions
- (C) They are accurate only if the vessel is underway
- (D) They are accurate electronic servomechanisms

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

62. If a chart indicates the depth of water to be 6 fathoms and your draft is 6.0 feet, what is the depth of the water under your keel? (Assume the actual depth and charted depth to be the same)

- (A) 6.0 feet
- (B) 26.5 feet
- (C) 30.0 feet
- (D) 56.5 feet

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

63. You are attempting to locate your position relative to a hurricane in the Northern Hemisphere. Where are is your vessel located if the wind direction remains steady, but with diminishing velocity?

- (A) In the left semicircle
- (B) On the storm track behind the center
- (C) On the storm track ahead of the center
- (D) In the right semicircle

*If choice B is selected set score to 1.*
64. In high latitudes, celestial observations can be made over a horizon covered with pack ice by bringing the sun tangent to the ice and __________.
   - (A) using a dip correction based on the height of eye above the ice
   - (B) using a dip correction from table 22 in Bowditch Vol. II
   - (C) doubling the semidiameter correction
   - (D) adding 30° of arc to the sight

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

65. If you were sailing in the North Pacific and were interested in the ice and iceberg limits, where could you find this information?
   - (A) Notice to Mariners
   - (B) Pilot Chart
   - (C) Coast Pilot
   - (D) None of the above

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

66. Chart information details to be used in ECDIS should be the latest edition of information originated by a government-authorized hydrographic office and conform to the standards of which organization?
   - (A) US Coast Guard
   - (B) International Maritime Organization
   - (C) NASA
   - (D) International Hydrographic Organization

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

67. After the recurvature of a hurricane’s track, which describes the result of its forward speed?
   - (A) The speed varies during the day
   - (B) The speed remains the same
   - (C) The speed decreases
   - (D) The speed increases

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

68. Which statement is TRUE for an unlighted, red and green, horizontally-banded buoys with the topmost band red?
   - (A) They are cylindrical in shape and called can buoys
   - (B) They are conical in shape and called nun buoys
   - (C) They may either be cylindrical or conical since the shape has no significance
   - (D) They are triangular in shape to indicate that it may not be possible to pass on either side of the buoy

   *If choice B is selected set score to 1.*
69. A great circle crosses the equator at 141°E. It will also cross the equator at what other longitude?

- (A) 39°W
- (B) 180°E
- (C) 141°W
- (D) 41°E

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

70. The initial great circle course angle between LAT 23°00'S, LONG 42°00'W and LAT 34°00'S, LONG 18°00'E is 063.8°. What is the true course?

- (A) 243.8°T
- (B) 116.2°T
- (C) 063.8°T
- (D) 296.2°T

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