

U.S.C.G. Merchant Marine Exam  
Master/Chief Mate Offshore Supply Vessels  
Q204 Navigation General - Oceans  
(Sample Examination)

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

1. While navigating in fog off a coastline of steep cliffs, you hear the echo of the ship's fog horn 4 seconds after the signal was sounded. What is the distance to the shore?
- (A) 209 yards
  - (B) 363 yards
  - (C) 480 yards
  - (D) 730 yards

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

2. The process by which the temperature and/or moisture characteristics of an air mass changes is called \_\_\_\_\_.
- (A) modification
  - (B) consolidation
  - (C) association
  - (D) sublimation or condensation

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

3. As the South Equatorial Current approaches the east coast of Africa, it divides with the main part flowing south to form the warm \_\_\_\_\_.
- (A) Madagascar Current
  - (B) Benguela Current
  - (C) Agulhas Current
  - (D) Canary Current

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

4. Which statement is TRUE concerning the current of the Gulf Stream?
- (A) It is slower at the time of neap tides than at spring tides.
  - (B) It reaches its daily maximum speed a few hours before the transit of the Moon.
  - (C) When the Moon is at its maximum declination the stream is narrower than when the Moon is on the equator.
  - (D) Variations in the trade winds affect the current.

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

5. Which compensates for errors introduced when the vessel heels over?

- (A) The Flinders bar
- (B) The soft iron spheres on the arms of the binnacle
- (C) Magnets placed in trays inside the binnacle
- (D) A single vertical magnet beneath the compass

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

6. The GP of a body for a high altitude sight is determined from the declination and the \_\_\_\_\_.

- (A) azimuth
- (B) right ascension
- (C) Greenwich hour angle
- (D) zenith distance

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

7. You desire to make good a true course of  $174^\circ$ . The variation is  $17^\circ\text{W}$ , magnetic compass deviation is  $4^\circ\text{W}$ , and gyrocompass error is  $4^\circ\text{E}$ . A west-southwest wind produces a  $4^\circ$  leeway. What is the course to steer per standard magnetic compass to make the true course good?

- (A)  $197^\circ\text{psc}$
- (B)  $195^\circ\text{psc}$
- (C)  $203^\circ\text{psc}$
- (D)  $199^\circ\text{psc}$

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

8. The Light List shows a lighted aid to navigation on the left bank. This means that the light can be seen on the starboard side of a vessel \_\_\_\_\_.

- (A) proceeding towards sea
- (B) descending the river
- (C) ascending the river
- (D) crossing the river

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

9. You are on course  $238^\circ\text{T}$ . To check the course of your vessel you should observe a celestial body on which bearing?

- (A)  $238^\circ$
- (B)  $090^\circ$
- (C)  $180^\circ$
- (D)  $328^\circ$

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

**10.** In the U.S. Aids to Navigation System, lateral aids as seen entering from seaward will display lights with which characteristic?

- (A) Occulting
- (B) Quick Flashing
- (C) Flashing
- (D) All of the above

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

**11.** An occulting light is one in which \_\_\_\_\_.

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

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

**12.** Which of the following statements is TRUE regarding automatic identification systems (AIS)?

- (A) AIS cannot be used to make passing arrangements because the ship-to-ship text messaging feature is for emergency use only.
- (B) AIS can be used to make passing arrangements via ship-to-ship text messaging but a vessel operator is not relieved from the requirement to sound whistle signals or make arrangements via bridge-to-bridge radiotelephone.
- (C) AIS cannot be used to make passing arrangements because the system is not capable of this type of ship-to-ship communications.
- (D) AIS can be used to make passing arrangements via ship-to-ship text messaging thus relieving a vessel operator from making such arrangements via bridge-to-bridge radiotelephone or signaling intent to pass via whistle signals.

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

**13.** You are on course 209°T. In order to check the longitude of your vessel, you should observe a celestial body on which bearing?

- (A) 000°
- (B) 299°
- (C) 270°
- (D) 209°

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

**14.** Under the IALA Buoyage Systems, a cardinal mark may NOT be used to \_\_\_\_\_.

- (A) indicate the safe side on which to pass a danger
- (B) draw attention to a feature in the channel such as a bend, junction, bifurcation, or end of a shoal
- (C) indicate the port and starboard sides of well-defined channels
- (D) indicate that the deepest water in an area is on the named side of the mark

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

**15.** A type of precipitation that occurs only in thunderstorms with strong convection currents that convey raindrops above and below the freezing level is known as \_\_\_\_\_.

- (A) freezing rain
- (B) rime
- (C) sleet
- (D) hail

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

**16.** Small, visible mound-like protuberances on the bottom of cumulonimbus clouds, that are potential breeding grounds for waterspouts and tornadoes, are called \_\_\_\_\_.

- (A) rime
- (B) ice prisms
- (C) thunderheads
- (D) mamma

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

**17.** Because of the reflecting properties of a sextant, if the sextant altitude reads 60° on the limb, the actual arc of the limb from 0° to the 60° reading is \_\_\_\_\_.

- (A) 20°
- (B) 30°
- (C) 40°
- (D) 60°

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

**18.** You are in LONG 165°E, zone time at 0400, 1 November. What is the zone time and date in LONG 165°W?

- (A) 1800, 1 November
- (B) 0600, 1 November
- (C) 0600, 31 October
- (D) 1800, 31 October

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

**19.** Under the IALA-A Buoyage System, when entering from seaward a lateral system buoy to be left to port may display which topmark shown in illustration D046NG below?

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

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

**20.** 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) 303°, 3h 13m
- (B) 265°, 2h 32m
- (C) 303°, 2h 32m
- (D) 265°, 3h 13m

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

**21.** A vertically-striped buoy may be \_\_\_\_\_.

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

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

**22.** You sight a spar buoy with the top mark shown in illustration D027NG below. You must take which of the following actions?

- (A) pass to the east of the buoy
- (B) pass to the south of the buoy
- (C) pass to the north of the buoy
- (D) keep well clear of the buoy and pass on either side

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

**23.** You are steaming on a course of  $208^{\circ}T$  at 21 knots. At 2019 you observe a lighthouse bearing  $129^{\circ}T$ . At 2030 the lighthouse bears  $103^{\circ}T$ . What is your distance off at the second bearing?

- (A) 8.2 miles
- (B) 8.9 miles
- (C) 9.3 miles
- (D) 8.6 miles

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

**24.** Which statement about the gyrocompass is FALSE?

- (A) It seeks the true meridian.
- (B) Its accuracy remains the same at all latitudes.
- (C) If an error exists, it is the same on all headings.
- (D) It can be used near the Earth's magnetic poles.

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

**25.** Which statement about gyrocompass error is TRUE?

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

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

**26.** Under Naval Control of Shipping who is responsible for routing and diverting ships and convoys?

- (A) The National Shipping Authority
- (B) The Maritime Defense Zone Sector
- (C) Any Navy Command
- (D) The Operational Control Authority

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

**27.** Spoil grounds, anchorage areas, cable areas, and military exercise areas are all marked by yellow buoys. Which special mark on the buoy will indicate the specific area you are in?

- (A) Lettering on the buoy
- (B) A topmark spherical in shape
- (C) A topmark triangular in shape
- (D) A topmark consisting of two cones with the points up

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

**28.** How is variation indicated on a small-scale nautical chart?

- (A) Magnetic compass table
- (B) Isogonic lines
- (C) Variation is not indicated on small-scale nautical charts.
- (D) Magnetic meridians

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

**29.** 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 and are known as the \_\_\_\_\_.

- (A) horse latitudes
- (B) prevailing westerlies
- (C) geostrophic winds
- (D) doldrums

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

**30.** The value of sixty nautical miles per degree of geodetic latitude is most correct at \_\_\_\_\_.

- (A) latitude 45°
- (B) the equator
- (C) the poles
- (D) all latitudes

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

**31.** Relative humidity is defined as \_\_\_\_\_.

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

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

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

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

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

**33.** How is the intensity of a light expressed in the Light Lists?

- (A) Luminous range
- (B) Nominal range
- (C) Geographic range
- (D) Meteorological range

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

**34.** What is the FIRST sign of the existence of a well developed tropical cyclone?

- (A) Gale force winds from the north
- (B) Steep, short-period waves and light wind
- (C) Thunderstorms and higher than usual humidity
- (D) An unusually long ocean swell

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

**35.** The horizontal angle between the magnetic meridian and the north-south line of the magnetic compass is \_\_\_\_\_.

- (A) dip
- (B) variation
- (C) compass error
- (D) deviation

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

**36.** 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 is the \_\_\_\_\_.

- (A) system electronic nautical chart
- (B) chart display information
- (C) standard display information
- (D) display base information

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

**37.** Which of the following statements is TRUE regarding automatic identification systems (AIS)?

- (A) AIS is designed to replace ARPA, maneuvering boards, and visual bearings as a means to ascertain the risk of collision.
- (B) AIS will not provide information on another vessel if that vessel is indistinguishable in radar sea clutter.
- (C) AIS can be relied upon as the sole means to determine course changes due to other AIS equipped traffic.
- (D) AIS provides near real-time information regarding another vessel's speed over ground and heading regardless of visibility.

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

**38.** Swells that have outrun the storm are produced in the \_\_\_\_\_.

- (A) left front quadrant
- (B) rear
- (C) directly ahead on the storms projected track
- (D) right front quadrant

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

**39.** Your present weather is sunny with a steady barometer. A low swell approaches your vessel from the south with crests passing at relatively long periods of about four per minute. This usually indicates \_\_\_\_\_.

- (A) an extra-tropical cyclone
- (B) a warm front from the south
- (C) a tropical cyclone south of your vessel
- (D) a hurricane about 100 miles south of your vessel and heading in your direction

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

**40.** When navigating coastwise and hurricane warnings are received, you should \_\_\_\_\_.

- (A) call the NWS for further information
- (B) have battened down and be heading for the nearest port of refuge
- (C) call the Coast Guard to request further information
- (D) just begin to react and make plans

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

**41.** Atmospheric pressure may be measured with a(n) \_\_\_\_\_.

- (A) barograph
- (B) mercurial barometer
- (C) aneroid barometer
- (D) All of the above

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

**42.** A siphon cell is a part of a \_\_\_\_\_.

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

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

**43.** What will act to dissipate fog?

- (A) Downslope motion of an air mass along a coast
- (B) Rain that is warmer than air
- (C) Advection of warm air over a colder surface
- (D) Upwelling cold water

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

**44.** The steepness of a cold front depends on \_\_\_\_\_.

- (A) the direction of wind around the front
- (B) the precipitation generated by the front
- (C) its velocity
- (D) the temperature of the air behind the front

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

**45.** Which of the following statements concerning frontal movements is TRUE?

- (A) A warm front usually has more violent weather associated with it than a cold front.
- (B) The temperature rises after a cold front passes.
- (C) The barometric pressure rises when a warm front passes.
- (D) A cold front generally passes faster than a warm front.

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

**46.** When observing a rapid rise in barometric pressure, you may expect \_\_\_\_\_.

- (A) clearing weather, possibly accompanied by high winds
- (B) heavy rain or severe thundershowers
- (C) clear weather with no wind, but the possibility of rain or snow within 24 hours
- (D) deteriorating weather with rain or snow

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

**47.** In low latitudes, the high(s) of the diurnal variation of pressure occur(s) at \_\_\_\_\_.

- (A) noon and midnight
- (B) 1600
- (C) noon
- (D) 1000 and 2200

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

**48.** In the doldrums you will NOT have \_\_\_\_\_.

- (A) frequent calms
- (B) high relative humidity
- (C) frequent showers and thunderstorms
- (D) steep pressure gradients

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

**49.** A celestial body's complete orbit around another body is \_\_\_\_\_.

- (A) a rotation
- (B) nutation
- (C) space motion
- (D) a revolution

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

**50.** A large group of stars revolving around a center is known as a \_\_\_\_\_.

- (A) shower
- (B) constellation
- (C) galaxy
- (D) cluster

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

**51.** The great circle of the celestial sphere that passes through the zenith, nadir, and the eastern point of the horizon is the \_\_\_\_\_.

- (A) principal vertical
- (B) prime vertical
- (C) hour circle
- (D) celestial meridian

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

**52.** The radius of a circle of equal altitude of a body is equal to the \_\_\_\_\_.

- (A) codeclination of the body
- (B) coaltitude of the body
- (C) altitude of the body
- (D) polar distance

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

**53.** The error in a sextant altitude caused by refraction is greatest when the celestial body is \_\_\_\_\_.

- (A) high in the sky
- (B) near the horizon
- (C) rising
- (D) at or near transit

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

**54.** A sidereal day is approximately how much shorter than a solar day?

- (A) 4 minutes
- (B) 8 minutes
- (C) 12 minutes
- (D) 16 minutes

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

**55.** Local sidereal time is equal to the \_\_\_\_\_.

- (A) LHA of Aries
- (B) right ascension of Aries plus  $180^\circ$
- (C) GHA of Aries minus  $180^\circ$
- (D) SHA of Aries

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

**56.** What is the geographic longitude of a body whose GHA is  $232^{\circ}27'$ ?

- (A)  $61^{\circ}52'E$
- (B)  $61^{\circ}52'W$
- (C)  $52^{\circ}27'E$
- (D)  $127^{\circ}33'E$

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

**57.** A dead reckoning (DR) plot \_\_\_\_\_.

- (A) should be replotted hourly
- (B) should be started each time the vessel's position is fixed
- (C) must utilize magnetic courses
- (D) must take set and drift into account

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

**58.** The paths of intended travel between three or more points is the \_\_\_\_\_.

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

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

**59.** Which statement about an estimated position is TRUE?

- (A) It may be based on a single LOP or questionable data.
- (B) It is usually based on soundings.
- (C) When a 3-LOP fix plots in a triangle, the center of the triangle is the estimated position.
- (D) It is more reliable than a fix based on radar bearings.

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

**60.** You take a bearing of  $264^{\circ}$  of a lighthouse. What bearing of another object would give the best fix?

- (A)  $350^{\circ}$
- (B)  $289^{\circ}$
- (C)  $081^{\circ}$
- (D)  $120^{\circ}$

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

**61.** 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) 247°
- (C) 315°
- (D) 335°

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

**62.** You are underway in an area where the charted depth is 8 fathoms. You compute the height of tide to be -4.0 feet. The draft of your vessel is 5.0 feet (1.52 meters). You determine the depth of the water beneath your keel to be \_\_\_\_\_.

- (A) 39 feet (11.9 meters)
- (B) 43 feet (13.1 meters)
- (C) 57 feet (17.4 meters)
- (D) 47 feet (14.3 meters)

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

**63.** When using a buoy as an aid to navigation which of the following should be considered?

- (A) The buoy may not be in the charted position.
- (B) If the light is flashing, the buoy should be considered to be in the charted location.
- (C) The buoy should be considered to always be in the charted location.
- (D) The buoy should be considered to be in the charted position if it has been freshly painted.

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

**64.** Except for N-S courses, and E-W courses on the equator, a great circle track between two points, when compared to a rhumb line track between the same two points, will \_\_\_\_\_.

- (A) always be nearer to the equator
- (B) be nearer to the pole or the equator depending on the latitudes of the arrival and departure positions
- (C) always be nearer to the elevated pole
- (D) be nearer to the pole in the Northern Hemisphere and nearer to the equator in the Southern Hemisphere

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

**65.** A great circle crosses the equator at 173°E. It will also cross the equator at what other longitude?

- (A) 73°W
- (B) 7°W
- (C) 73°E
- (D) 173°W

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

**66.** When the declination of the Moon is 0°12.5'S, you can expect some tidal currents in Gulf Coast ports to \_\_\_\_\_.

- (A) become weak and variable
- (B) exceed the predicted velocities
- (C) become reversing currents
- (D) have either a double ebb or a double flood

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

**67.** An important lunar cycle affecting the tidal cycle is called the nodal period. How long is this cycle?

- (A) 18 days
- (B) 19 years
- (C) 16 days
- (D) 6 years

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

**68.** Which statement is TRUE concerning equatorial tides?

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

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

- 69.** You swung ship and compared the magnetic compass against the gyro compass to find deviation. Gyro error is  $2^{\circ}\text{E}$ . The variation is  $8^{\circ}\text{W}$ . Find the deviation on a magnetic compass heading of  $234^{\circ}$ .

HEADING	HEADING	HEADING
<u>PSC-PGC</u>	<u>PSC-PGC</u>	<u>PSC-PGC</u>
$358.5^{\circ}\text{-}350^{\circ}$	$122.5^{\circ}\text{-}110^{\circ}$	$239.5^{\circ}\text{-}230^{\circ}$
$030.5^{\circ}\text{-}020^{\circ}$	$152.0^{\circ}\text{-}140^{\circ}$	$269.0^{\circ}\text{-}260^{\circ}$
$061.5^{\circ}\text{-}050^{\circ}$	$181.0^{\circ}\text{-}170^{\circ}$	$298.0^{\circ}\text{-}290^{\circ}$
$092.0^{\circ}\text{-}080^{\circ}$	$210.0^{\circ}\text{-}200^{\circ}$	$327.5^{\circ}\text{-}320^{\circ}$

- (A)  $0.5^{\circ}\text{E}$
- (B)  $1.0^{\circ}\text{W}$
- (C)  $2.5^{\circ}\text{E}$
- (D)  $2.5^{\circ}\text{W}$

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

- 70.** While your vessel is proceeding down a channel you notice a range of lights in line with your vessel's mast. If your vessel is on course  $001^{\circ}$  per gyro compass and the charted value of the range of lights is  $359^{\circ}\text{T}$ , what is the gyro compass error?

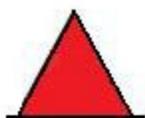
- (A)  $1^{\circ}\text{E}$
- (B)  $1^{\circ}\text{W}$
- (C)  $2^{\circ}\text{E}$
- (D)  $2^{\circ}\text{W}$

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

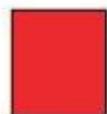
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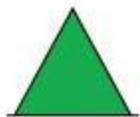
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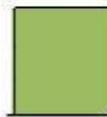
A



B



C



D