

U.S.C.G. Merchant Marine Exam  
Mate Offshore Supply Vessels  
Q212 Navigation General - Oceans  
(Sample Examination)

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

**1.** 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.*

**2.** With respect to automatic identification systems (AIS), which information is required to be broadcast every 1 to 10 seconds?

- (A) Vessel's draft
- (B) Call sign
- (C) Route plan
- (D) None of the above

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

**3.** At evening stars, the first stars that should be observed are those with an azimuth in what quadrant?

- (A) Eastern
- (B) Southern
- (C) Northern
- (D) Western

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

**4.** 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.*

**5.** The revision date of a chart is printed on which area of the chart?

- (A) Lower-left corner
- (B) Part of the chart title
- (C) Top center
- (D) Any clear area around the neat line

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

6. 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.*

7. What are the only magnetic compass correctors that correct for both permanent and induced effects of magnetism?

- (A) Athwartships magnets
- (B) Heeling magnets
- (C) Quadrantal spheres
- (D) Fore-and-aft magnets

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

8. Which topmark shown in illustration D023NG below identifies an isolated danger?

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

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

9. While taking weather observations, you determine that the wind is blowing from the northeast. You would record the wind direction in the weather log as \_\_\_\_\_.

- (A) 045°
- (B) 090°
- (C) 135°
- (D) 225°

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

10. A cardinal mark showing an uninterrupted quick-flashing white light indicates the deepest water in the area is on the \_\_\_\_\_.

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

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

**11.** In illustration D044NG below, what type of buoy is indicated by the letter A?

- (A) can
- (B) spar
- (C) pillar
- (D) nun

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

**12.** The world is divided into NAVAREAS for the dissemination of important marine information. Which NAVAREAS include the U.S. coasts?

- (A) I and II
- (B) IV and XII
- (C) V and X
- (D) VI and VII

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

**13.** Your ship is proceeding on course  $320^{\circ}T$  at a speed of 25 knots. The apparent wind is from  $30^{\circ}$  off the starboard bow, speed 32 knots. What is the relative direction, true direction and speed of the true wind?

- (A) Relative  $80^{\circ}$ , true  $040^{\circ}T$ , 16.2 knots
- (B) Relative  $60^{\circ}$ , true  $040^{\circ}T$ , 18.6 knots
- (C) Relative  $40^{\circ}$ , true  $080^{\circ}T$ , 16.4 knots
- (D) Relative  $80^{\circ}$ , true  $060^{\circ}T$ , 15.2 knots

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

**14.** 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  $359^{\circ}T$ , what is the gyro compass error?

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

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

**15.** Which of the following statements is FALSE?

- (A) An anemometer measures wind speed.
- (B) A thermometer measures temperature.
- (C) A psychrometer measures wind pressure.
- (D) A barometer measures atmospheric pressure.

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

- 16.** 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.*

- 17.** The compass rose on a nautical chart indicates both variation and \_\_\_\_\_.
- (A) annual rate of variation change
  - (B) compass error
  - (C) deviation
  - (D) precession

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

- 18.** The pressure gradient between the horse latitudes and doldrums runs \_\_\_\_\_.
- (A) north to south
  - (B) east to west
  - (C) northeast to southwest
  - (D) northwest to southeast

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

- 19.** You are steaming on a course of 208°T at 21 knots. At 2019 you observe a lighthouse bearing 129°T. At 2030 the lighthouse bears 103°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.*

- 20.** The Sailing Directions are published in the Enroute format and the \_\_\_\_\_.
- (A) Coastal editions
  - (B) Planning Guide
  - (C) Pilot format
  - (D) World Port Index

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

**21.** What is NOT a characteristic of cardinal marks?

- (A) Yellow and black bands
- (B) White lights
- (C) Square or triangular topmarks
- (D) Directional orientation to a hazard

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

**22.** IN REGION A of the IALA Buoyage System, when entering from seaward, the starboard side of a channel would be marked by a \_\_\_\_\_.

- (A) green conical buoy
- (B) red can buoy
- (C) red conical buoy
- (D) green can buoy

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

**23.** Compass deviation is caused by \_\_\_\_\_.

- (A) a dirty compass housing
- (B) magnetism from the earth's magnetic field
- (C) magnetism within the vessel
- (D) misalignment of the compass

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

**24.** Which factor(s) is/are used to develop the charted information of a lighthouse?

- (A) Height and intensity of the light
- (B) Height of the light only
- (C) Height of the light and the observer
- (D) Height of the observer and the intensity of the light

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

**25.** On a chart, the characteristic of the light on a lighthouse is shown as flashing white with a red sector. The red sector \_\_\_\_\_.

- (A) indicates a danger area
- (B) serves no significant purpose
- (C) is used to identify the characteristics of the light
- (D) indicates the limits of the navigable channel

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

**26.** Which type of daymark is used to mark the starboard side of the channel when entering from sea?

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

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

**27.** Under the IALA-A Buoyage System, a buoy indicating the preferred channel is to port would have \_\_\_\_\_.

- (A) a pillar shape
- (B) an odd number
- (C) an even number
- (D) horizontal bands

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

**28.** When approaching a preferred-channel buoy, the best channel is NOT indicated by the \_\_\_\_\_.

- (A) color of the uppermost band
- (B) shape of an unlighted buoy
- (C) light characteristic
- (D) color of the light

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

**29.** You are underway on course 120°T and your maximum speed is 12 knots. The eye of a hurricane bears 150°T, 120 miles from your position. The hurricane is moving towards 295°T at 20 knots. If you maneuver at 12 knots to avoid the hurricane, what could be the maximum CPA?

- (A) 89 miles
- (B) 96 miles
- (C) 105 miles
- (D) 117 miles

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

**30.** When entering from seaward, a buoy displaying a single-flashing red light indicates \_\_\_\_\_.

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

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

**31.** Tropical cyclones are classified by form and intensity. Which system does not have closed isobars?

- (A) Cyclone
- (B) Tropical depression
- (C) Tropical disturbance
- (D) Hurricane

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

**32.** You are sailing south on the Intracoastal Waterway (ICW) when you sight a green can buoy with a yellow square painted on it. Which of the following is TRUE?

- (A) The buoy marks the end of the ICW in that area.
- (B) You should pass the buoy close aboard on either side.
- (C) The yellow square is retroreflective material used to assist in sighting the buoy at night.
- (D) You should leave the buoy to port.

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

**33.** What is the characteristic of a quick light?

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

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

**34.** A sextant having an index error that is "on the arc" has a \_\_\_\_\_.

- (A) semidiameter error
- (B) negative correction
- (C) positive correction
- (D) dip error

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

**35.** Which information does the outer ring of a compass rose on a nautical chart provide?

- (A) Annual rate of variation change
- (B) True directions
- (C) Variation
- (D) Magnetic directions

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

**36.** In which source could you find the number of a chart for a certain geographic area?

- (A) American Practical Navigator
- (B) U.S. Coast Guard Light List
- (C) Catalog of Charts
- (D) Chart No. 1

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

**37.** To find the specific phase characteristic of a lighthouse on a sound of the United States you would use the \_\_\_\_\_.

- (A) Light List
- (B) U.S. Coast Pilot
- (C) Nautical Chart Catalog
- (D) American Practical Navigator

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

**38.** 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.*

**39.** The index error is determined by adjusting the \_\_\_\_\_.

- (A) micrometer drum
- (B) horizon glass
- (C) sextant frame
- (D) index mirror

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

**40.** ECDIS must give an alarm for which of the following cases?

- (A) If the ship's ETA has changed beyond the set limit
- (B) If the ship is going to reach a critical point on the planned route
- (C) When the speed of a dangerous target exceeds a set limit
- (D) All of the above

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

**41.** In order to insure that the racon signal is visible on your 3 cm radar, the \_\_\_\_\_.

- (A) rain clutter control should be off but, if necessary, may be on low
- (B) gain control should be turned to maximum
- (C) 10 cm radar should be placed on standby or turned off
- (D) radar should be stabilized, head up

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

**42.** With respect to automatic identification systems (AIS), which information is expected to be broadcast every 1 to 10 seconds?

- (A) Latitude and longitude
- (B) Navigational status
- (C) Rate of turn
- (D) All of the above

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

**43.** The Earth's irregular heating is caused by \_\_\_\_\_.

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

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

**44.** Plain language is usually used on marine weather \_\_\_\_\_.

- (A) observations
- (B) synoptic chart
- (C) analyses
- (D) forecasts

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

**45.** 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.*

**46.** Fetch is the \_\_\_\_\_.

- (A) measurement of a wave's steepness
- (B) stretch of water over which a wave-forming wind blows
- (C) time in seconds required for two crests to pass a given point
- (D) distance a wave travels between formation and decay

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

**47.** The largest waves (heaviest chop) will usually develop where the wind blows \_\_\_\_\_.

- (A) over slack water
- (B) against the flow of the current
- (C) at right angles to the flow of the current
- (D) in the same direction as the flow of the current

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

**48.** That half of the hurricane to the right hand side of its track (as you face the same direction that the storm is moving) in the Northern Hemisphere is called the \_\_\_\_\_.

- (A) safe semicircle
- (B) dangerous semicircle
- (C) leeward side
- (D) windward side

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

**49.** Prior to reading an aneroid barometer, you should tap the face lightly with your finger to \_\_\_\_\_.

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

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

**50.** An air mass is termed "warm" if \_\_\_\_\_.

- (A) the ground over which it moves is cooler than the air
- (B) it originated in a low pressure area
- (C) it originated in a high pressure area
- (D) it is above 70°F

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

**51.** A sign of thunderstorm development is a cumulus cloud \_\_\_\_\_.

- (A) creating cold downdrafts that are felt on the ground
- (B) darkening, growing in size and forming an anvil top
- (C) that shows extensive vertical development
- (D) All of the above

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

**52.** Altostratus clouds are defined as \_\_\_\_\_.

- (A) vertical development clouds
- (B) high clouds
- (C) middle clouds
- (D) low clouds

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

**53.** As the temperature of the air reaches the dew point, \_\_\_\_\_.

- (A) it begins to snow
- (B) water freezes
- (C) fog may form
- (D) rain must develop

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

**54.** Which statement is TRUE when comparing cold and warm fronts?

- (A) They are very similar with the exception of wind direction.
- (B) Cold fronts are more violent and of shorter duration.
- (C) Warm fronts are more violent and of longer duration.
- (D) Cold fronts are milder and last longer.

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

**55.** 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.*

**56.** Pressure gradient is a measure of \_\_\_\_\_.

- (A) vertical pressure variation
- (B) a high-pressure area
- (C) pressure difference over time
- (D) pressure difference over horizontal distance

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

**57.** Which weather element cannot be measured accurately while on board a moving vessel?

- (A) Visibility
- (B) Atmospheric pressure
- (C) Temperature
- (D) Wind direction

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

**58.** According to Buys Ballot's law, when an observer in the Northern Hemisphere experiences a northeast wind the center of low pressure is located to the \_\_\_\_\_.

- (A) northeast
- (B) west-southwest
- (C) northwest
- (D) south-southeast

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

**59.** Which wind results from a land mass cooling more quickly at night than an adjacent water area?

- (A) Mistral
- (B) Coastal breeze
- (C) Sea breeze
- (D) Land breeze

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

**60.** The direction of the southeast trade winds is a result of the \_\_\_\_\_.

- (A) change of seasons
- (B) humidity
- (C) rotation of the earth
- (D) equatorial current

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

**61.** 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.*

**62.** 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.*

**63.** 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.*

**64.** 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.*

**65.** 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.*

**66.** Your vessel is entering port and you have steadied up on a range, dead ahead, in line with your keel. After a few minutes the range, still dead ahead, appears as shown in illustration D047NG below. Which action should you take?

- (A) Maintain heading, keeping the range dead ahead
- (B) Increase speed
- (C) Alter heading to the left
- (D) Alter heading to the right

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

**67.** You take a bearing of  $191^\circ$  and  $313^\circ$  to two objects. Which bearing of a third object will give the best fix?

- (A)  $001^\circ$
- (B)  $069^\circ$
- (C)  $209^\circ$
- (D)  $356^\circ$

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

**68.** You take a bearing of  $264^\circ$  of a lighthouse. Which bearing of another object would give the best fix?

- (A)  $239^\circ$
- (B)  $182^\circ$
- (C)  $291^\circ$
- (D)  $059^\circ$

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

**69.** The velocity of a rotary tidal current will increase when the Moon is \_\_\_\_\_.

- (A) full
- (B) at perigee
- (C) new
- (D) All of the above

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

**70.** What is an ebb current?

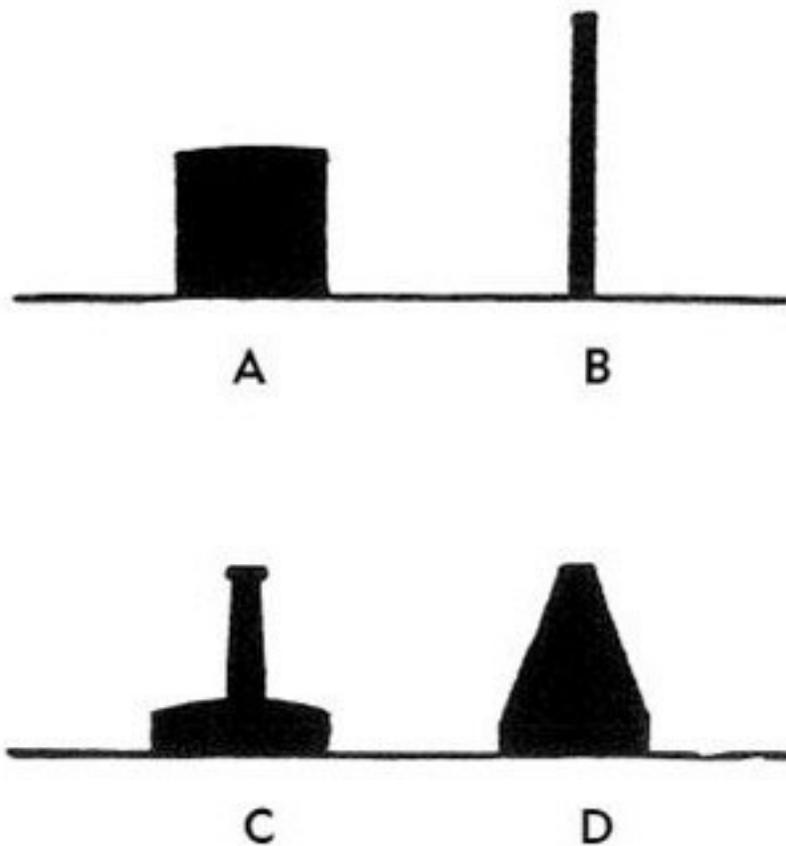
- (A) A current at maximum flow
- (B) A current coming in
- (C) A current going out
- (D) A current at minimum flow

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

## D023NG



## D044NG



## D047NG

