

U.S.C.G. Merchant Marine Exam
Mate Less than 500-1600 Gross Registered Tons
Q139 Navigation General – Oceans
(Sample Examination)

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

1. When is the peak of the hurricane season in the western North Pacific?

- A. July through October
- B. November through December
- C. April through June
- D. January through March

Correct answer: A

2. Which is one of the advantages of a vessel utilizing a NAVTEX unit to receive MSI?

- A. Ease of operation, knowledge of Morse code is not required
- B. They cover a broad spectrum of the radio band allowing reception on almost any type of receiver
- C. Information on a given topic is only broadcast at specified times
- D. Only an ordinary FM radio is necessary to receive these warnings

Correct answer: A

3. 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

4. Your vessel is on course 180°T speed 22 knots. The apparent wind is from 70° off the port bow, speed 20 knots. What are the true direction and speed of the wind?

- A. 45°T, 21.0 knots
- B. 51°T, 24.0 knots
- C. 58°T, 21.2 knots
- D. 64°T, 26.0 knots

Correct answer: B

5. 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

Correct answer: B

6. 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 3 hours
 - C. Every 8 hours
 - D. Every 6 hours

Correct answer: B

7. 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 $093^{\circ}T$, and the variation is $6^{\circ}E$. If the heading of your vessel at the time of the sighting is 097° per standard magnetic compass, what is the correct deviation?
- A. $5^{\circ}E$
 - B. $5^{\circ}W$
 - C. $10^{\circ}E$
 - D. $10^{\circ}W$

Correct answer: D

8. Under the IALA-A Buoyage System, a green spar buoy with a triangular topmark would indicate that the buoy _____.
- A. may be left close aboard on either side
 - B. is marking the preferred channel
 - C. should be left to port when heading out to sea
 - D. is on the north side of a point of interest

Correct answer: C

9. Which correction(s) must be applied to an aneroid barometer?
- A. Instrument error and height error
 - B. Height error only
 - C. Instrument error and latitude correction
 - D. Instrument error only

Correct answer: A

10. You take a bearing of 191° and 313° to two objects. Which bearing of a third object will give the best fix?
- A. 001°
 - B. 069°
 - C. 209°
 - D. 356°

Correct answer: B

11. Deviation is the angle between the _____.
- A. true meridian and the axis of the compass card
 - B. axis of the compass card and the degaussing meridian
 - C. true meridian and the magnetic meridian
 - D. magnetic meridian and the axis of the compass card

Correct answer: D

12. What does a barometer measure?
- A. Dew point
 - B. Temperature
 - C. Atmospheric pressure
 - D. Relative humidity

Correct answer: C

13. 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 malfunction of propulsion machinery, steering gear, radar, gyrocompass or depth-sounder, if installed
 - B. Any characteristics of the vessel that affect its maneuverability
 - C. A shortage of personnel, lack of charts, maps or other required publications
 - D. The type of credential he/she holds and its serial number

Correct answer: D

14. How can you follow the approach of a dangerous cyclonic storm?
- A. Review the Coast Pilot or Sailing Directions
 - B. By monitoring the change in the sea temperature
 - C. Utilizing the National Weather Service Observing Handbook No.1, Marine Surface Observations
 - D. By a newspaper, a weather map, a weather fax, or a weather forecast

Correct answer: D

15. What do red sectors of navigation lights warn mariners of?
- A. Heavily trafficked areas
 - B. Recently sunken vessels
 - C. Shoals or nearby land
 - D. Floating debris

Correct answer: C

16. Which is TRUE concern the horizon glass of a sextant?
- A. It is between the horizon and the shade glasses
 - B. It is silvered on its half nearer the frame
 - C. It is mounted on the index arm
 - D. It is a movable bar the same material as the frame

Correct answer: B

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

- A. Argentina
- B. Japan
- C. Canada
- D. India

Correct answer: D

18. You are underway on course 328°T when you sight a buoy broad on your port bow. Which would indicate that you are in the best navigable water?

- A. The buoy is painted yellow on the top half and black on the bottom
- B. The buoy is a western quadrant buoy
- C. The buoy exhibits a light with the characteristic of VQ(3)5s
- D. The buoy has a topmark of two cones with points down

Correct answer: C

19. 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

Correct answer: C

20. When cold air displaces warm air you have which type of front?

- A. An occluded front
- B. A cold front
- C. A warm front
- D. A stationary front

Correct answer: B

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

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

Correct answer: B

22. Which of the following must the electronic chart of an ECDIS display, as required by IMO/IHO?

- A. Ferry routes
- B. Hydrography
- C. Regulatory boundaries
- D. All of the above

Correct answer: D

23. 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

Correct answer: B

24. Weather systems in the middle latitudes generally travel in which direction?

- A. West to East
- B. East to West
- C. North to South
- D. Southeast to Northwest

Correct answer: A

25. The dew point is reached when which condition occurs?

- A. The relative humidity reaches 50%
- B. The atmospheric pressure is 14.7 lbs. per square inch
- C. The temperature of the air equals the temperature of the seawater
- D. The air becomes saturated with water vapor

Correct answer: D

26. What do solid green arrows on the main body of a pilot chart indicate?

- A. prevailing wind directions
- B. prevailing ocean current directions
- C. shortest great circle routes
- D. probable surface current flow

Correct answer: B

27. Which term is used to describe a generally circular low-pressure area?

- A. A cold front
- B. A cyclone
- C. An occluded front
- D. An anticyclone

Correct answer: B

28. What is the reaction of a gyrocompass to an applied force known as?

- A. Precession
- B. Earth rate
- C. Gravity effect
- D. Gyroscopic inertia

Correct answer: A

29. You are underway in the North Sea on course 216°T when you sight a buoy bearing 021° relative. Under the IALA Buoyage System, you are in the best navigable water if the buoy has which of the following characteristics?

- A. Has a continuous very quick light
- B. Is horizontally banded yellow, black, yellow
- C. Has a double cone topmark with both points up
- D. Has a light characteristic of Q(6) + L Fl 15s

Correct answer: D

30. Which publication contains information on navigation regulations, landmarks, channels, anchorages, tides, currents, and clearances of bridges for Chesapeake Bay?

- A. Sailing Directions
- B. Pilot Charts
- C. Coast Pilot
- D. Light List

Correct answer: C

31. The magnitude of three stars is indicated. Which star is the brightest?

- A. Vega +0.1
- B. Antares +1.2
- C. Altair +0.9
- D. Cannot be determined; magnitude indicates size not brightness

Correct answer: A

32. The tropical year differs from which year by 20 minutes?

- A. Equinoctial year
- B. Natural year
- C. Astronomical year
- D. Sidereal year

Correct answer: D

33. Which is the most commonly encountered fog at sea?

- A. Conduction fog
- B. Radiation fog
- C. Frontal fog
- D. Advection fog

Correct answer: D

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

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

Correct answer: A

35. In a tropical cyclone in the Northern Hemisphere, a vessel hove to with the wind shifting counterclockwise would be in which location?

- A. Directly in the path of the center
- B. In the dangerous semicircle
- C. Ahead of the storm
- D. In the navigable semicircle

Correct answer: D

36. Which maritime radio system, consisting of a series of coast stations, transmits coastal warnings?

- A. SAFESEA
- B. HYDROLANT/HYDROPAC
- C. NAVAREA
- D. NAVTEX

Correct answer: D

37. You have been observing your radar screen and notice that a contact on the screen has remained in the same position, relative to you, for several minutes. Your vessel is making 10 knots through the water. Which statement is TRUE?

- A. The contact is on a reciprocal course at the same speed as your vessel.
- B. The contact is on the same course and speed as your vessel.
- C. The contact is dead in the water.
- D. The radar is showing false echoes and is probably defective.

Correct answer: B

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

- A. Available nuclei in the air
- B. Moderate winds
- C. A surface warmer than the dew point of the air
- D. Clear skies

Correct answer: D

39. At about GMT 1436, on 3 December, the lower limb of the Moon is observed with a sextant having an index error of 2.5' on the arc. The height of eye is 32 feet. The sextant altitude (hs) is 3°38.8'. What is the observed altitude?

- A. Ho 4°18.6'
- B. Ho 4°29.1'
- C. Ho 4°36.3'
- D. Ho 4°42.2'

Correct answer: B

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

- A. Morocco
- B. Peru
- C. Saudi Arabia
- D. Poland

Correct answer: B

41. The depth of water on a chart is indicated as 23 meters. What does that depth convert to?

- A. 11.5 fathoms
- B. 12.6 fathoms
- C. 69.0 feet
- D. 78.6 feet

Correct answer: B

42. What is the primary source of the earth's weather?

- A. The sun
- B. The moon
- C. The oceans
- D. The solar system

Correct answer: A

43. What is the longitude of the geographical position of a body whose Greenwich hour angle is $210^{\circ}30'$?

- A. $149^{\circ}30'E$
- B. $30^{\circ}30'E$
- C. $59^{\circ}30'W$
- D. $120^{\circ}30'W$

Correct answer: A

44. How are aids to navigation marking the intracoastal waterway identified?

- A. White retro-reflective material
- B. The light characteristic and color for lighted aids
- C. Yellow stripes, squares, or triangles marked on them
- D. The letters ICW after the aid's number or letter

Correct answer: C

45. When should a navigator rely on the position of floating aids to navigation?

- A. During calm weather only
- B. Only when fixed aids are not available
- C. During daylight only
- D. Only when inside a harbor

Correct answer: B

46. What does a wind vane on a moving vessel show?

- A. The true wind direction
- B. The apparent wind direction
- C. The estimated wind direction
- D. The dead reckoning wind direction

Correct answer: B

47. Before a magnetic compass is adjusted certain correctors must be checked to ensure that they are free of permanent magnetism. Which are the correctors?

- A. Dip needle and heeling magnet
- B. Flinders bar and quadrantal spheres
- C. Fore-and-aft and athwartships magnets
- D. Heeling magnet and Flinders bar

Correct answer: B

48. A mooring buoy, if lighted, shows which color light?

- A. White
- B. Any color except red or green
- C. Yellow
- D. Blue

Correct answer: A

49. What is characteristic of an isophase light?

- A. 1 sec. flash, 1 sec. eclipse
- B. 6 sec. flash, 3 sec. eclipse
- C. 4 sec. flash, 2 sec. eclipse, 3 sec. flash, 2 sec. eclipse
- D. 2 sec. flash, 5 sec. eclipse

Correct answer: A

50. Which scale is used to estimate wind speed by observing sea conditions?

- A. Wind scale
- B. Metric scale
- C. Beaufort scale
- D. Coriolis scale

Correct answer: C

51. The set of the current is the _____.

- A. maximum speed of the current
- B. speed of the current at a particular time
- C. direction in which the current flows
- D. direction from which the current flows

Correct answer: C

52. Which towing vessel(s) is/are exempt from carrying radar?

- A. A vessel used solely in a limited area, such as a barge fleeting area.
- B. A vessel exempted, in writing, by the Captain of the Port.
- C. A vessel used solely for pollution response or assistance towing.
- D. All of the above

Correct answer: D

53. Which term is given to a light that has a light period shorter than its dark period?

- A. Occulting
- B. Alternating
- C. Flashing
- D. Pulsating

Correct answer: C

54. You are in a channel inbound from sea. A daymark used to mark a channel junction when the preferred channel is to starboard will have the shape indicated by what letter in illustration D045NG below?

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

Correct answer: A

55. You are steaming on a course of 084°T at a speed of 13 knots. At 1919 a lighthouse bears 106.5°T. At 1957 the same lighthouse bears 129°T. What will be your distance off the lighthouse when abeam?

- A. 5.7 miles
- B. 7.1 miles
- C. 8.2 miles
- D. 4.3 miles

Correct answer: A

56. What enables you to estimate the bearing of a storm's center?

- A. An educated guess
- B. Pascal's Law
- C. The left-hand rule
- D. Buys Ballot's Law

Correct answer: D

57. Under the U.S. Aids to Navigation System, what does a lighted buoy with a spherical topmark mark indicate?

- A. Safe water
- B. The port side of the channel
- C. A hazard to navigation
- D. The position of underwater cables

Correct answer: A

58. What is the distance from the bottom of a wave trough to the top of a wave crest?

- A. Wave height
- B. Wave breadth
- C. Wave depth
- D. Wave length

Correct answer: A

59. How often are the time signals broadcast by WWV and WWVH transmitted?

- A. They are transmitted continuously throughout day
- B. They are transmitted every 15 minutes
- C. They are transmitted every 30 minutes
- D. They are transmitted every hour

Correct answer: A

60. An ECDIS is required to display which information?

- A. Radar targets
- B. Meteorological data
- C. Waypoints
- D. Soundings

Correct answer: D

61. Which is TRUE of a preferred-channel buoy?

- A. They may be lettered
- B. They show a white light
- C. They are spherical
- D. All of the above

Correct answer: A

62. You are underway on course 050°T and your maximum speed is 13 knots. The eye of a hurricane bears 120°T, 100 miles from your position. The hurricane is moving towards 265°T at 25 knots. What course should you steer at 13 knots to have the maximum CPA?

- A. 299°T
- B. 306°T
- C. 324°T
- D. 276°T

Correct answer: C

63. During daylight savings time the meridian used for determining the time is located farther _____.

- A. west in west longitude and east in east longitude
- B. west
- C. east in west longitude and west in east longitude
- D. east

Correct answer: D

64. Considering the general circulation of the atmosphere, what is the name given to the wind system between latitudes 30°N and 60°N?

- A. Prevailing Westerlies
- B. Trade winds
- C. Southeasterlies
- D. Northeast Trades

Correct answer: A

65. 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

66. Which is TRUE for the directive force acting on a gyrocompass?

- A. The force increases as the latitude increases, being maximum at the geographic poles
- B. The force increases as the latitude decreases, being maximum at the geographic equator
- C. The force remains the same at all latitudes
- D. The force is greatest when a vessel is near the Earth's magnetic equator

Correct answer: B

67. 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

Correct answer: B

68. Which form of cloud, that is often known as "mackerel sky", is generally associated with fair weather?

- A. Nimbostratus
- B. Cumulonimbus
- C. Cirrocumulus
- D. Stratus

Correct answer: C

69. In working out a local apparent noon sight for your latitude, you subtract the Ho from 90° . The 90° represents the angular distance from _____.

- A. the equator to the elevated pole
- B. your zenith to the elevated pole
- C. your horizon to your zenith
- D. the geographical position of the Sun to the elevated pole

Correct answer: C

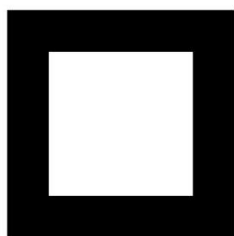
70. Local sidereal time is equal to the _____.

- A. GHA of Aries minus 180°
- B. LHA of Aries
- C. right ascension of Aries plus 180°
- D. SHA of Aries

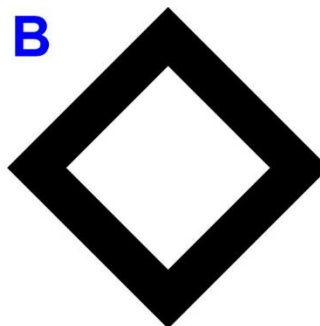
Correct answer: B

D045NG

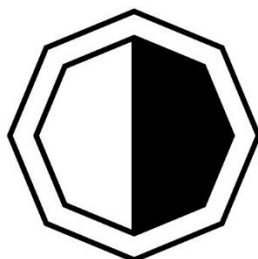
A



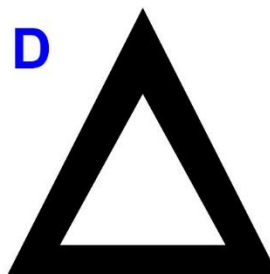
B



C



D



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