

## U.S.C.G. Merchant Marine Exam

Master or Mate Less than 200 Gross Registered Tons

Q152 Navigation General - Oceans or Near Coastal

(Sample Examination)

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

1. At 2237 ZT on 14 July you are in DR position LAT 33°57' N, LONG 150°32' W, when you observe an amplitude of Saturn. The planet is about one Sun's diameter above the visible horizon and bears 258.6°psc. The variation is 14°E. What is the deviation?
- (A) 1.0°E
  - (B) 1.0°W
  - (C) 2.0°W
  - (D) 0.0°

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

2. Your dead reckoning position should be plotted \_\_\_\_\_.
- (A) at least every hour on the hour in the open waters of the sea
  - (B) whenever an estimated position is plotted
  - (C) when coming on or going off soundings
  - (D) when it agrees with your GPS position

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

3. By convention, the Earth's south magnetic pole is colored \_\_\_\_\_.
- (A) red
  - (B) blue
  - (C) white
  - (D) black

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

4. While proceeding downriver (descending) you sight a red diamond-shaped panel with small, red reflector squares in each corner on the left bank. Under the U.S. Aids to Navigation System on the Western Rivers this is a \_\_\_\_\_.
- (A) passing daymark
  - (B) cable crossing
  - (C) crossing daymark
  - (D) special purpose signal

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

5. An occulting light is one in which \_\_\_\_\_.
- (A) the periods of light and darkness are equal
  - (B) the period of light exceeds the period of darkness
  - (C) the period of darkness exceeds the period of light
  - (D) there is only a partial eclipse of the light

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

6. 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  $097^{\circ}$  per standard magnetic compass, what is the correct deviation?
- (A)  $5^{\circ}E$
  - (B)  $10^{\circ}E$
  - (C)  $5^{\circ}W$
  - (D)  $10^{\circ}W$

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

7. The depth of water on a chart is indicated as 23 meters. This is equal to \_\_\_\_\_.
- (A) 11.5 fathoms
  - (B) 12.6 fathoms
  - (C) 69.0 feet
  - (D) 78.6 feet

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

8. What is the average speed of the movement of a hurricane following the recurvature of its track?
- (A) 40 to 50 knots
  - (B) 5 to 10 knots
  - (C) 20 to 30 knots
  - (D) Over 60 knots

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

9. You are steering  $202^{\circ}T$ , and a light is picked up dead ahead at a distance of 14.6 miles at 2234. You change course to pass the light 5 miles off abeam to starboard. If you are making 21 knots, what is your ETA at the position 5 miles off the light?
- (A) 2310
  - (B) 2313
  - (C) 2316
  - (D) 2319

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

**10.** When a dual purpose marking is used, the mariner following the Intracoastal Waterway should be guided by the \_\_\_\_\_.

- (A) color of the top band
- (B) shape of the aid
- (C) color of the aid
- (D) shape of the yellow mark

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

**11.** You are underway on course 160°T at 10 knots. The current is 210°T at 0.9 knots. What is the course made good?

- (A) 169°T
- (B) 160°T
- (C) 156°T
- (D) 164°T

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

**12.** In modern fathometers the sonic or ultrasonic sound waves are produced electrically by means of a(n) \_\_\_\_\_.

- (A) amplifier
- (B) transmitter
- (C) transceiver
- (D) transducer

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

**13.** With respect to failure warnings and status indications, GPS receivers should provide, at a minimum, \_\_\_\_\_.

- (A) a cross-track error alarm
- (B) an alarm if engine speed is suddenly reduced
- (C) a warning of loss of position
- (D) an indication of a change in satellite configuration

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

**14.** Under the U.S. Aids to Navigation System on the Western Rivers, a preferred-channel buoy is \_\_\_\_\_.

- (A) solid red
- (B) solid green
- (C) horizontally-banded red and green
- (D) vertically-striped red and white

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

15. The winds of the "roaring forties" are strongest near \_\_\_\_\_.

- (A) 40°N
- (B) 50°N
- (C) 50°S
- (D) 40°S

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

16. While proceeding along the Norwegian coast on course 039°T, you sight the black-yellow-black banded buoy shown in illustration D021NG below, bearing 053°T. What action should you take?

- (A) Maintain course
- (B) Alter course to 053° and leave the buoy close aboard on either side
- (C) Alter course to port to rapidly open the bearing to the right
- (D) Alter course to 060° and ensure that the true bearings decreases

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

17. Under the IALA Buoyage System, which topmark shown in illustration D023Ng below will be displayed on a safe water mark?

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

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

18. In the U.S. Aids to Navigation System, red and green horizontally-banded buoys mark \_\_\_\_\_.

- (A) general anchorage areas
- (B) fishing grounds
- (C) junctions or bifurcations
- (D) channels for shallow draft vessels

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

19. You are steaming in a westerly direction along the Gulf Coast. You see ahead of you a lighted buoy showing a red isophase light. Which action should you take?

- (A) Alter course and leave the buoy near by on either side.
- (B) Alter course and pass the buoy well-off on either side.
- (C) Alter course to port and leave the buoy to starboard.
- (D) Alter course to starboard and leave the buoy to port.

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

**20.** Geographic range is the maximum distance at which a light may be seen under \_\_\_\_\_.

- (A) perfect visibility conditions, limited only by interference from background lighting
- (B) perfect visibility conditions, limited only by the curvature of the Earth
- (C) existing visibility conditions, limited only by the intensity of the light
- (D) existing visibility conditions, limited only by the curvature of the Earth

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

**21.** A harbor chart could have a scale of \_\_\_\_\_.

- (A) not more than 1:25,000
- (B) 1:150,000
- (C) not less than 1:500,000
- (D) 1:35,000

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

**22.** Which publication lists Class I and II private aids to navigation in or along navigable waters of the United States?

- (A) Light List
- (B) Sailing Directions
- (C) Aids to Navigation Manual
- (D) List of Private Aids

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

**23.** Mean lower low water is the reference plane used for \_\_\_\_\_.

- (A) all vertical measurements
- (B) water depths on the U.S. east coast only
- (C) soundings on the U.S. east and west coasts
- (D) heights above water for lights, mountains, etc.

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

**24.** The directive force of a gyrocompass \_\_\_\_\_.

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

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

**25.** The Light List Does NOT contain information on \_\_\_\_\_.

- (A) radio beacon systems
- (B) radio direction finder calibration stations
- (C) aeronautical lights useful for marine navigation
- (D) the Global Positioning System (GPS)

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

**26.** The buoy symbol printed on your chart is leaning to the northeast. This indicates \_\_\_\_\_.

- (A) nothing special for navigational purposes
- (B) you should stay to the north or east of the buoy
- (C) the buoy is a major lighted buoy
- (D) you should stay to the west or south of the buoy

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

**27.** Which government agency publishes the U.S. Coast Pilot?

- (A) Army Corps of Engineers
- (B) National Geospatial-Intelligence Agency
- (C) National Ocean Service
- (D) U.S. Coast Guard

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

**28.** What agency of the U.S. Government issues charts of U.S. waters and Coast Pilots?

- (A) U.S. Naval Observatory
- (B) National Ocean Service
- (C) U.S. Coast Guard
- (D) National Imagery and Mapping Agency

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

**29.** Charts should be corrected by using information published in the \_\_\_\_\_.

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

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

**30.** A system of reservoirs and connecting tubes in a gyro compass is called a \_\_\_\_\_.

- (A) gyrotron
- (B) mercury ballistic
- (C) rotor
- (D) spider element

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

**31.** Magnets in the binnacles of magnetic compasses are used to reduce the effect of \_\_\_\_\_.

- (A) local attraction
- (B) deviation
- (C) variation
- (D) All of the above

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

**32.** The region containing 3/4 of the mass of the atmosphere and the region to which are confined such phenomena as clouds, storms, precipitation and changing weather conditions is called \_\_\_\_\_.

- (A) troposphere
- (B) stratosphere
- (C) stratopause
- (D) tropopause

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

**33.** Your vessel is participating in the Voluntary Observing Ship Program, you are preparing WS Form B-80 as seen in illustration D041NG below. Your position is LAT 64°42'N, LONG 02°28'W. How would this be encoded?

- (A) 99647, 70025
- (B) 9064N, 9025W
- (C) 90647, 90024
- (D) 0647N, 00025

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

**34.** Your vessel is participating in the Voluntary Observing Ship Program, at 1200 ZT on 31 July, your position is LAT 24°33'N, LONG 173°05'W. You are preparing WS Form B-80 as seen in illustration D041NG below. How should you encode the first three groups after the call sign if you estimate the wind?

- (A) 01003, 99245, 71731
- (B) 01243, 92433, 71731
- (C) 31243, 99245, 71731
- (D) 31003, 92433, 71730

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

**35.** A tsunami is caused by a(n) \_\_\_\_\_.

- (A) tidal wave
- (B) earthquake on the ocean's floor
- (C) storm surge caused by a hurricane or tropical storm
- (D) tornado

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

**36.** If the current and wind are in the same direction, the sea surface represents a wind speed \_\_\_\_\_.

- (A) higher than actually exists
- (B) that has no proportional relationship
- (C) that actually exists
- (D) lower than actually exists

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

**37.** Which instrument is used to measure the relative humidity of the air?

- (A) A spectrometer
- (B) A hydrometer
- (C) A barograph
- (D) A hygrometer

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

**38.** A sling psychrometer is used to measure \_\_\_\_\_.

- (A) barometric pressure
- (B) engine temperature
- (C) dry bulb and wet bulb temperatures
- (D) seawater temperature

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

**39.** During the winter months, the southeast trade winds are \_\_\_\_\_.

- (A) weaker than during the summer months
- (B) drier than during the summer months
- (C) wetter than during the summer months
- (D) stronger than during the summer months

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

**40.** A "Norther" in the Gulf of Mexico is \_\_\_\_\_.

- (A) a strong northerly wind that generally occurs between November and March
- (B) a wind shift to the north accompanied by a drop in temperature
- (C) a forcible northerly wind of at least 20 knots
- (D) All of the above

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

**41.** Anticyclones are usually characterized by \_\_\_\_\_.

- (A) dry, fair weather
- (B) high winds and cloudiness
- (C) overcast skies
- (D) gustiness and continuous precipitation

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

**42.** If a weather bulletin shows the center of a low pressure system to be 100 miles due east of you, what winds can you expect in the Southern Hemisphere?

- (A) North-northwesterly
- (B) South-southeasterly
- (C) North-northeasterly
- (D) South-southwesterly

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

**43.** The cold ocean current which meets the warm Gulf Stream between latitudes 40° and 43°N to form the "cold wall" is called the \_\_\_\_\_.

- (A) North Atlantic Current
- (B) North Cape Current
- (C) Labrador Current
- (D) Greenland Current

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

**44.** The Brazil Current flows in which general direction?

- (A) Northwesterly
- (B) Southeasterly
- (C) Southwesterly
- (D) Northerly

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

**45.** You are at anchor in the anchorage at the entrance to Delaware Bay. If you weigh anchor at 1445 DST (ZD +4) on 24 July 1983 and proceed northbound enroute to Philadelphia at a speed of 10 knots, you will have \_\_\_\_\_.

- (A) an ebb current north of New Castle, DE
- (B) a weak flood between Reedy Island and Edgemoor
- (C) a flood current from Ship John Shoal Lt. to Philadelphia
- (D) a flood current the entire trip

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

**46.** Your vessel will be docking at Chester, PA, during the evening of 22 April 1983. The chart shows a depth of 20 feet (6.1 meters) at the pier. What will be the depth of water available at 1856 EST (ZD +5)?

- (A) 22.4 feet (6.8 meters)
- (B) 24.9 feet (7.6 meters)
- (C) 25.7 feet (7.8 meters)
- (D) 23.4 feet (7.2 meters)

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

**47.** You are proceeding up a channel at night. It is marked by a range which bears 185°T. You steady up on a compass course of 180° with the range in line dead ahead. This indicates that you(r) \_\_\_\_\_.

- (A) are being affected by a southerly current
- (B) must come right to get on the range
- (C) course is in error
- (D) compass has some easterly error

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

**48.** You are underway in a vessel with a draft of 6.0 feet. You are in an area where the charted depth of the water is 4 fathoms. You would expect the depth of water beneath your keel to be approximately \_\_\_\_\_.

- (A) 12 feet
- (B) 18 feet
- (C) 24 feet
- (D) 30 feet

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

**49.** A vessel at LAT 32°14.7'N, LONG 66°28.9'W, heads for a destination at LAT 36°58.7'N, LONG 75°42.2'W. Determine the distance by Mercator sailing.

- (A) 300.2° miles
- (B) 538.2° miles
- (C) 241.2° miles
- (D) 270.2° miles

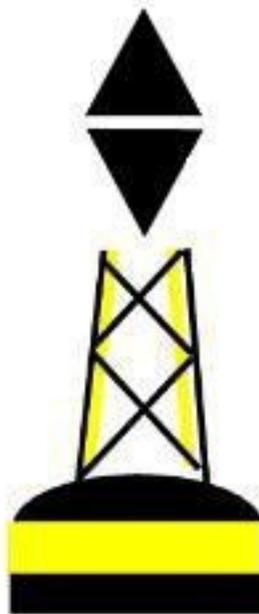
*If choice B is selected set score to 1.*

**50.** On September 9 your 2130 zone time (ZD +5) DR position is LAT 45°08'N, LONG 82°38'W. At that time, you observe Polaris bearing 000.5°pgc. The chronometer time of the observation is 02h 26m 09s, and the chronometer is 1m 43s slow. The variation is 8.7°W. What is the gyro error?

- (A) 9.4°W
- (B) 1.2°E
- (C) 0.7°E
- (D) 0.8°W

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

## D021NG



## D023NG



# National Maritime Center

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## D041NG

WS FORM B-80 (5-94) PRES. BY WMO DIRECTIVES		<b>WEATHER REPORT FOR IMMEDIATE TRANSMISSION</b>				U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION NATIONAL WEATHER SERVICE
NO.	SHIP NAME	DATE SENT (UTC)	TIME SENT (UTC)	STA. CALLED	FREQUENCY	
<b>ADDRESSES</b>						
U.S. Coast Guard: No address needed, start with BBXX indicator and ship's call sign.						
<b>INMARSAT</b> Standard A: Select—Coast Earth Station (CES), routine priority, duplex telex channel, and initiate call. When GA + is received, select 41 +. Upon receipt of answerback, NWS OBS MHTS, send the weather report starting with the BBXX indicator and ship's call sign. End the report with 5 periods. Try to limit INMARSAT call time to 30 seconds. Standard C: To establish special access code 41, see manufacturers recommended instructions for set-up, or the Mariners Weather' Log Summer, 1994, or later editions.						
U.S. commercial and foreign radio stations: To: OBS METEO _____ (get address from "Radio Stations Accepting. . . ."). Start with BBXX indicator and ship's call sign and combine the remaining numbers into 10-character groups.						
INDICATOR	CALL SIGN	YYGGi <sub>w</sub>	99L <sub>a</sub> L <sub>a</sub> L <sub>a</sub>	Q <sub>c</sub> L <sub>o</sub> L <sub>o</sub> L <sub>o</sub>	i <sub>R</sub> i <sub>x</sub> hVV	Nddff
BBXX			99		4	
ØØff	1S <sub>n</sub> TTT	2S <sub>n</sub> T <sub>d</sub> T <sub>d</sub> T <sub>d</sub>	4PPPP	5appp	7 <sub>ww</sub> W <sub>1</sub> W <sub>2</sub>	8N <sub>r</sub> C <sub>L</sub> C <sub>M</sub> C <sub>H</sub>
222D <sub>s</sub> V <sub>s</sub>	ØS <sub>s</sub> T <sub>w</sub> T <sub>w</sub> T <sub>w</sub>	2P <sub>w</sub> P <sub>w</sub> H <sub>w</sub> H <sub>w</sub>	3d <sub>w1</sub> d <sub>w1</sub> d <sub>w2</sub> d <sub>w2</sub>	4P <sub>w1</sub> P <sub>w1</sub> H <sub>w1</sub> H <sub>w1</sub>	5P <sub>w2</sub> P <sub>w2</sub> H <sub>w2</sub> H <sub>w2</sub>	6I <sub>2</sub> E <sub>s</sub> E <sub>s</sub> R <sub>s</sub>
8S <sub>w</sub> T <sub>b</sub> T <sub>b</sub> T <sub>b</sub>	ICE	C <sub>i</sub> S <sub>i</sub> b <sub>i</sub> D <sub>i</sub> Z <sub>i</sub>	PLAIN LANGUAGE			TRANSMITTED BY
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