

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

### Apprentice Mate Steersman

#### Q420 Navigation General - Great Lakes and Inland

#### (Sample Examination)

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

1. 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.*

2. 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.*

3. 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.*

4. 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.*

5. Automatic identification systems (AIS) are expected to broadcast all of the following information EXCEPT \_\_\_\_\_.

- (A) navigation status
- (B) ship's heading
- (C) port of origin
- (D) time stamp

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

6. 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.*

7. 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.*

8. You have the "conn" at the time the helmsman who is steering by hand reports that the rudder is not responding to the wheel. Your FIRST action should be to \_\_\_\_\_.

- (A) signal the engine room to stop the engines
- (B) call the engine room
- (C) call the Master
- (D) shift the selector switch to the other steering pump

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

9. You are steering 163°T, and a light is picked up dead ahead at a distance of 11 miles at 0142. You change course to pass the light 2 miles off abeam to starboard. If you are making 13 knots, what is your ETA at the position 2 miles off the light?

- (A) 0226
- (B) 0235
- (C) 0232
- (D) 0229

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

**10.** The radar control that shortens all echoes on the display and reduces clutter caused by rain or snow is the \_\_\_\_\_.

- (A) sensitivity time control (sea clutter control)
- (B) fast time constant (differentiator)
- (C) brilliance control
- (D) receiver gain control

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

**11.** You are steering  $202^{\circ}\text{T}$ , 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.*

**12.** You are underway on course  $215^{\circ}\text{T}$  at 12 knots. The current is  $000^{\circ}\text{T}$  at 2.3 knots. What is the speed being made good?

- (A) 8.5 knots
- (B) 10.2 knots
- (C) 11.2 knots
- (D) 10.9 knots

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

**13.** You are underway on course  $160^{\circ}\text{T}$  at 10 knots. The current is  $210^{\circ}\text{T}$  at 0.9 knots. What is the course made good?

- (A)  $169^{\circ}\text{T}$
- (B)  $160^{\circ}\text{T}$
- (C)  $156^{\circ}\text{T}$
- (D)  $164^{\circ}\text{T}$

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

**14.** You want to transit Hell Gate, NY on 23 July 1983. What is the period of time around the AM (ZD +4) slack before ebb when the current will be less than 0.3 knot?

- (A) 0939 to 0957
- (B) 0348 to 0356
- (C) 0844 to 0852
- (D) 0943 to 0953

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

**15.** Which installed equipment must be tested and logged when a new Master assumes command?

- (A) Vessel control alarms
- (B) Navigational lights and search lights
- (C) Internal communications, including sound-powered telephones
- (D) All of the above must be tested

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

**16.** 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.*

**17.** On 6 July 1983, at 1830 DST (ZD +4), what will be the predicted height of tide at Newburgh, NY?

- (A) 2.0 feet
- (B) 3.3 feet
- (C) 2.4 feet
- (D) 2.6 feet

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

- 18.** 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.*

- 19.** Your vessel is proceeding down 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  $229^{\circ}T$ , and variation is  $6^{\circ}W$ . If the heading of your vessel at the time of the sighting is  $232^{\circ}$  per standard magnetic compass, what is the deviation?
- (A)  $9^{\circ}W$
  - (B)  $3^{\circ}W$
  - (C)  $3^{\circ}E$
  - (D)  $9^{\circ}E$

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

- 20.** With respect to automatic identification systems (AIS), which information is required to be broadcast every 1 to 10 seconds?
- (A) Time stamp
  - (B) Location of antenna
  - (C) Destination
  - (D) None of the above

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

- 21.** Under the IALA cardinal system, a mark with quick white light showing 3 flashes every 10 seconds indicates that the safest water in the area is on the \_\_\_\_\_.
- (A) north side of the mark
  - (B) east side of the mark
  - (C) south side of the mark
  - (D) west side of the mark

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

**22.** 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.*

**23.** 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.*

**24.** 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.*

**25.** 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.*

**26.** 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.*

**27.** 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 nearby 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.*

**28.** You are heading out to sea in a buoyed channel and see a quick-flashing green light on a buoy ahead of you. In U.S. waters, you should leave the buoy \_\_\_\_\_.

- (A) well clear on either side
- (B) to port
- (C) to starboard
- (D) about 50 yards off on either side

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

**29.** 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.*

- 30.** You are approaching an open drawbridge and sound the proper signal. You receive no acknowledgment from the bridge. Which action should you take?
- (A) Hold in the channel as a vessel is closing the bridge from the other direction.
  - (B) Approach with caution and proceed through the open draw.
  - (C) Approach under full control to a position no closer than 400 yards from the bridge and await a signal from the bridge.
  - (D) Resound the opening signal and do not pass through the bridge until signals have been exchanged.

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

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

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

- 32.** 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.*

- 33.** 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.*

**34.** 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.*

**35.** Complete information on weather broadcasts throughout the world is contained in \_\_\_\_\_.

- (A) the Notice to Mariners
- (B) Selected Worldwide Marine Weather Broadcasts
- (C) your local newspaper
- (D) the daily weather map

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

**36.** 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.*

**37.** You are a watchstanding mate and have come to the bridge to relieve the watch. After reviewing the chart and having been briefed by the off-going mate, you are now ready to effect the relief. The watch is officially transferred to you after \_\_\_\_\_.

- (A) the mate being relieved says, "You have the conn" and you state the ship's course
- (B) you say, "I relieve you" and you state the course per gyro and magnetic compasses
- (C) the mate being relieved tells you the vessel's course and speed and states that you have the watch
- (D) you state the vessel's charted position, present course and port of destination

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

**38.** Which navigational equipment is required to be tested and logged before a towing vessel embarks on a voyage of more than 24 hours?

- (A) GPS receiver(s)
- (B) All required navigational equipment, without exception
- (C) Radar(s) and VHF radio(s)
- (D) Compass and/or swing meter

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

**39.** 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.*

**40.** 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.*

**41.** 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.*

**42.** 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.*

**43.** 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.*

**44.** 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.*

**45.** In many areas "atoll" clouds (clouds of vertical development) are produced over small islands. These are the result of \_\_\_\_\_.

- (A) warm air from the sea rising over higher land areas
- (B) descending air over the islands
- (C) rising air currents produced by the warm islands
- (D) cool land air mixing with warm sea air

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

**46.** 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.*

**47.** The velocity of a rotary tidal current will be decreased when the Moon is \_\_\_\_\_.

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

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

**48.** A tide is called diurnal when \_\_\_\_\_.

- (A) the high tide and low tide are exactly six hours apart
- (B) the high tide is higher and the low tide is lower than usual
- (C) two high tides occur during a lunar day
- (D) only one high and one low water occur during a lunar day

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

**49.** You are proceeding up a channel at night. It is marked by a range which bears  $185^{\circ}T$ . You steady up on a compass course of  $180^{\circ}$  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.*

**50.** A line of position from a celestial observation is a segment of a \_\_\_\_\_.

- (A) parallel of declination
- (B) vertical circle
- (C) circle of equal altitude
- (D) parallel of altitude

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

## 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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