

U.S.C.G. Merchant Marine Exam  
Master of Unlimited Tonnage  
Q306 Great Lakes Topics  
(Sample Examination)

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

1. Your vessel is approaching the International Bridge on the St. Mary's River. If the gage on the bridge, read from top to bottom, indicates 124 ft. and the IGLD (1955) is 600 ft., determine the actual vertical clearances between the existing water level and the lowest point of the bridge over the channel.
- A. 124 feet
  - B. 476 feet
  - C. 724 feet
  - D. 840 feet

Correct answer: A

2. When does a vessel which is being assisted by an icebreaker, display a flag hoist consisting of the code numeral "4"?
- A. Any time the speed begins to drop
  - B. When it becomes icebound
  - C. If it receives ice damage
  - D. When the vessel stops

Correct answer: B

3. You are steaming at 22 knots and burning 319 barrels of fuel per day. You must decrease your consumption to 137 barrels per day. What must you reduce your speed to in order to burn this amount of fuel?
- A. 18.2
  - B. 12.4
  - C. 14.8
  - D. 16.6

Correct answer: D

4. You have steamed 918 miles at 15.0 knots and consumed 183 tons of fuel. If you have 200 tons of usable fuel remaining, how far can you steam at 12 knots?
- A. 1568 miles
  - B. 1960 miles
  - C. 1261 miles
  - D. 1021 miles

Correct answer: A

5. As a rule, ships of most configurations, when drifting in calm water with negligible current, will lie in which orientation?
- A. The beam will be to the wind
  - B. With the wind on the quarter
  - C. The bow will be to the wind
  - D. The stern will be to the wind

Correct answer: A

6. On the Great Lakes, which defines the term "controlling depth"?
- A. The least depth within the limits of the channel which restricts the navigation
  - B. The designed dredging depth of a channel constructed by the Corps. of Engineers
  - C. The minimum amount of tail water available behind a dam
  - D. The distance in units of the chart (feet, meters or fathoms) from the reference datum to the bottom

Correct answer: A

7. On 20 July your vessel's 1626 zone time DR position is LAT 27°13.0'N, LONG 63°42.0'W, when you take an azimuth of the Sun.

Determine the gyro error using the azimuth information.

Chronometer time: 08h 24m 18s

Chronometer error: slow 02m 12s

Gyro bearing: 279.3°

Variation: 15°W

- A. 1.9°W
- B. 2.6°W
- C. 1.4°E
- D. 2.6°E

Correct answer: A

8. Using the Guidance Manual for Loading M.V. Grand Haven, determine the amount of ballast required in tank No. 5 (P & S) to maintain drafts of 17'-00" forward and 22'-06" aft for a vessel loaded with grain which has a test weight of 35 lbs.

- A. 785 tons each
- B. 820 tons each
- C. 880 tons each
- D. 900 tons each

Correct answer: C

9. Which defines the pitch of a propeller on a merchant vessel?
- A. The positive pressure resulting from the difference of the forces on both sides of the moving propeller in still water without slip
  - B. The number of feet per revolution the propeller is designed to advance in still water without slip
  - C. The angle that the propeller makes with a free stream of water
  - D. The angle that the propeller makes with the surface of the water

Correct answer: B

10. Which statement is TRUE with respect to the load line markings shown in illustration D031DG below?

- A. U.S. flag vessels of 100 gross tons and upward must show these marks.
- B. A vessel displaying these marks may load in the salt waters of the St. Lawrence River.
- C. Vessels engaged solely on Great Lakes voyages are not required to show these marks.
- D. U.S. flag vessels less than 100 feet in length and less than 200 gross tons are not required to show these marks.

Correct answer: B

11. Which statement about stopping a vessel is TRUE?

- A. Putting a rudder hard over is the easiest way to stop a vessel.
- B. A tunnel bow thruster can be used in an emergency to reduce the stopping distance.
- C. Using ship's engine astern is the easiest way to stop.
- D. A lightly laden vessel requires as much stopping distance as a fully laden vessel when the current is from astern.

Correct answer: C

12. The propeller on a vessel has a diameter of 21.2 feet and a pitch of 20.0 feet. What would be the apparent slip if the vessel cruised 391 miles in a 24-hour day (observed distance) at an average RPM of 88?

- A. +11.5%
- B. -6.2%
- C. +6.2%
- D. -11.5%

Correct answer: C

13. On 15 July in DR position LAT 22°19.0'N, LONG 154°37.0'W, you observe an amplitude of the Sun. The Sun's center is on the visible horizon and bears 298°psc. The chronometer reads 04h 45m 19s and is 01m 56s slow. Variation in the area is 7.5°W. What is the deviation of the standard magnetic compass?

- A. 2.7°W
- B. 3.0°E
- C. 3.6°W
- D. 3.9°E

Correct answer: B

14. When is the phenomenon known as a "seiche" most likely to occur on Lake Erie?

- A. When the Moon and Sun are in alignment
- B. When strong winds from the Northeast suddenly diminish
- C. During the passage of a rapidly moving warm front
- D. Only during the months of May through August

Correct answer: B

15. If the pitch of the propeller is 22.4 feet, and the revolutions per day are 103,690, calculate the day's run allowing 9% positive slip.

- A. 416.4 miles
- B. 382.0 miles
- C. 321.7 miles
- D. 347.6 miles

Correct answer: D

16. Advection fog holds longest over which portions of the lakes?

- A. Northwest
- B. Southeast
- C. Northeast
- D. Southwest

Correct answer: A

17. Your vessel has been ordered to proceed to the United Grain Growers Wharf at Thunder Bay, Lake Superior, for the purpose of taking on a load of wheat. Which publication(s) would you consult for such information as the length of the wharf, the depth of the water alongside, and the loading capacity at the facility?

- A. The Navigational Chart and Light List Vol. VII
- B. The Lake Carriers Association Facilities Directory
- C. The United States Coast Pilot #6
- D. The International Guide to Canadian Ports and Facilities

Correct answer: C

18. When the period of beam seas equals the natural rolling period of a vessel, what will most likely occur?

- A. Excessive rolling
- B. Excessive yawing
- C. Excessive pitching
- D. No change should be evident

Correct answer: A

19. Storms that enter the Great Lakes Basin from the west and northwest at a peak in October are the products of which pressure system?

- A. Polar highs
- B. Alberta lows
- C. Northwesters
- D. Fata morgana

Correct answer: B

20. What is NOT an indication that pack ice may be nearby?

- A. Sighting a walrus in the Arctic
- B. Ice blink
- C. The presence of icebergs
- D. Absence of wave motion

Correct answer: C

21. You are underway in heavy weather and your bow is into the seas. Which action should you take to prevent pounding?

- A. Put the seas on an 85 degree angle from the bow
- B. Secure all loose gear on your vessel
- C. Increase the speed of the vessel
- D. Decrease the speed of the vessel

Correct answer: D

22. What is NOT a basic ship handling rule for navigating in ice concentrations on the Great Lakes?

- A. Keep moving - even very slowly but keep moving.
- B. Transit ice along pressure ridges when possible.
- C. Excessive speed means ice damage.
- D. Work with the ice movement, not against.

Correct answer: B

23. Your vessel is being assisted by an icebreaker. How should you indicate that you are ready to cast off the towline?

- A. Display code letter "Y" (Yankee)
- B. Sound five short blasts on his whistle
- C. Sound one prolonged blast on the whistle
- D. Display code numeral "5"

Correct answer: A

24. Using the Guidance Manual for Loading M.V. Grand Haven, determine the amount of ballast required in tank No. 3 (P & S) to maintain drafts of 17'-00" forward and 22'-06" aft for a vessel loaded with grain which has a test weight of 37.6 lbs.

- A. 930 tons each
- B. 955 tons each
- C. 975 tons each
- D. 990 tons each

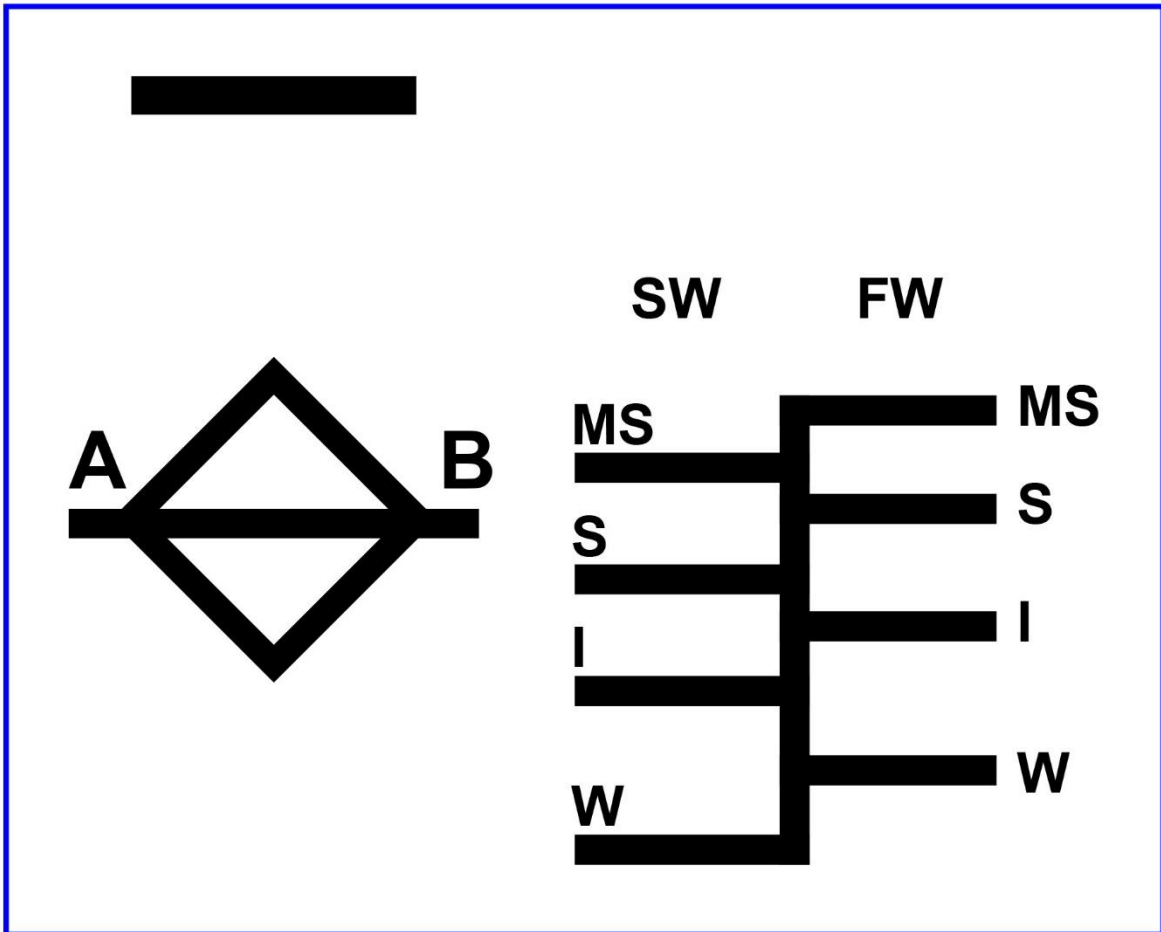
Correct answer: C

25. Which statement is FALSE with regard to the Great Lakes Light List?

- A. Volume VII does not include information on Class III private aids to navigation.
- B. The Light List does not contain information on any of the navigational aids maintained by Canada.
- C. The Light List does not include Coast Guard mooring buoys, special purpose buoys, or buoys marking fish net areas.
- D. The Light List should be corrected each week from the appropriate Notice to Mariners.

Correct answer: B

## D031DG



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