

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

OUPV to Master or Mate Oceans or Near Coastal  
Less than 200 GRT

Q159 Navigation Problems – Oceans  
(Sample Examination)

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

1. On 26 September your 0830 zone time DR position is LAT 23°04.0'N, LONG 129°16.0'E. Your vessel is on course 119°T at a speed of 20.0 knots. What is the zone time of local apparent noon (LAN)?
- A. 1158
  - B. 1205
  - C. 1210
  - D. 1214

Correct answer: C

2. At 1730 zone time, on 3 March, your DR position is LAT 16°00'S, LONG 80°00'W. You are steering 000°T at a speed of 7.5 knots. What is the zone time of sunset?
- A. 1829
  - B. 1834
  - C. 1843
  - D. 1852

Correct answer: C

3. On 5 May at 1953 zone time, you take a sextant observation of Polaris. Your vessel's DR position is LAT 29°30.0'N, LONG 66°25.7'W, and your sextant reads 29°07.2'. Your chronometer reads 11h 51m 45s, and your chronometer error is 01m 36s slow. Your height of eye is 56 feet, and the index error for your sextant is 1.5' on the arc. What is the latitude of your vessel from your observation of Polaris?
- A. 29°14.3'N
  - B. 29°23.6'N
  - C. 29°32.3'N
  - D. 29°38.8'N

Correct answer: B

4. Which condition exists at the summer solstice in the Northern Hemisphere?
- A. The Sun shines equally on both hemispheres.
  - B. The north polar regions are in continual darkness.
  - C. The Southern Hemisphere is having winter.
  - D. The Northern Hemisphere is having short days and long nights.

Correct answer: C

5. While steaming at 15.0 knots, your vessel consumes 326 barrels of fuel oil per day. In order to reduce consumption to 178 barrels of fuel oil per day, what is the maximum speed the vessel can turn for?
- A. 11.1 knots
  - B. 12.2 knots
  - C. 8.1 knots
  - D. 8.5 knots

Correct answer: B

6. The great circle distance from LAT  $24^{\circ}25.3'N$ , LONG  $83^{\circ}02.6'W$  to LAT  $35^{\circ}57.2'N$ , LONG  $5^{\circ}45.7'W$  is 3966.5 miles. Determine the latitude of the vertex.
- A.  $38^{\circ}46.2'N$
  - B.  $38^{\circ}16.4'N$
  - C.  $38^{\circ}09.4'N$
  - D.  $37^{\circ}57.3'N$

Correct answer: C

7. You are on course  $146^{\circ}T$ . To check the speed of your vessel you should observe a celestial body on which bearing?
- A.  $000^{\circ}$
  - B.  $056^{\circ}$
  - C.  $090^{\circ}$
  - D.  $146^{\circ}$

Correct answer: D

8. On 17 December your 0600 ZT fix gives you a position of LAT  $27^{\circ}16.7'N$ , LONG  $138^{\circ}39.2'W$ . Your vessel is on course  $137^{\circ}T$ , and your speed is 14.8 knots. Local apparent noon (LAN) occurs at 1207 ZT, at which time a meridian altitude of the Sun's lower limb is observed. The observed altitude ( $H_o$ ) for this sight is  $40^{\circ}22.1'$ . What is the calculated latitude at LAN?
- A.  $26^{\circ}09.9'N$
  - B.  $26^{\circ}11.6'N$
  - C.  $26^{\circ}13.0'N$
  - D.  $26^{\circ}15.4'N$

Correct answer: D

9. A vessel at LAT  $32^{\circ}14.7'N$ , LONG  $66^{\circ}28.9'W$ , heads for a destination at LAT  $36^{\circ}58.7'N$ , LONG  $75^{\circ}42.2'W$ . Determine the distance by Mercator sailing.
- A. 538.2 miles
  - B. 270.2 miles
  - C. 300.2 miles
  - D. 241.2 miles

Correct answer: A

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10. At 0600 zone time, on 16 March your DR position is LAT 20°10.0'N, LONG 81°30.0'W. You are steering course 300°T. The speed over the ground is 10 knots. You observed 3 morning sun lines. Determine the latitude and longitude of your 1130 running fix.

**NP-0004**

<b>ZONE TIME</b>	<b>GHA</b>	<b>OBSERVED ALTITUDE (Ho)</b>	<b>DECLINATION</b>
0800	12°50.0'	19°00.0'	S 01°38.8'
1030	50°20.4'	51°42.0'	S 01°36.5'
1130	65°20.5'	62°11.5'	S 01°35.5'

- A. LAT 20°28.5'N, LONG 82°12.6'W
- B. LAT 20°32.0'N, LONG 82°16.4'W
- C. LAT 20°39.0'N, LONG 82°22.9'W
- D. LAT 20°42.5'N, LONG 82°26.2'W

Correct answer: C