

U.S.C.G. Merchant Marine Exam

Master Less than 100 GRT to Master or Mate
Less than 200 GRT Oceans or Near Coastal

Q157 Navigation Problems – Oceans

(Sample Examination)

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

1. 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

ZONE TIME	GHA	OBSERVED ALTITUDE (Ho)	DECLINATION
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

2. Determine the great circle distance and initial course from LAT 34°51.0'N, LONG 115°01.2'E to LAT 10°16.0'S, LONG 51°42.6'E.
- A. 4493 miles, 245.6°T
 - B. 4436 miles, 245.3°T
 - C. 4582 miles, 245.6°T
 - D. 4598 miles, 245.6°T

Correct answer: A

3. While steaming at 15 knots, your vessel burns 326 bbls of fuel per day. What will be the rate of fuel consumption if you decrease speed to 12.2 knots?
- A. 215 bbls
 - B. 277 bbls
 - C. 300 bbls
 - D. 175 bbls

Correct answer: D

4. On 14 March your 1846 ZT DR position is LAT 21°57.6' N, LONG 132°16.2' W. At that time, you observe Polaris with a sextant altitude (hs) of 22°16.8'. The chronometer time of the sight is 03h 45m 10s, and the chronometer error is 01m 32s slow. The index error is 3.2' off the arc, and the height of eye is 44.9 feet. What is your latitude by Polaris?
- A. 21°32.4'N
 - B. 21°49.8'N
 - C. 21°51.0'N
 - D. 21°53.1'N

Correct answer: B

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5. On 13 August your 0345 ZT DR position is LAT $21^{\circ}35.0'N$, LONG $135^{\circ}26.0'W$. You are on course $052^{\circ}T$ at a speed of 14 knots. What will be the zone time of sunrise at your vessel?
- A. 0443
 - B. 0449
 - C. 0536
 - D. 0540

Correct answer: C

6. While steering a course of $150^{\circ}T$, you wish to observe a body for a latitude check. What would the azimuth have to be?
- A. $000^{\circ}T$
 - B. $090^{\circ}T$
 - C. $240^{\circ}T$
 - D. $150^{\circ}T$

Correct answer: A

7. On 15 November your 0813 zone time (ZT) fix gives you a position of LAT $22^{\circ}30.0'N$, LONG $67^{\circ}28.0'W$. Your vessel is on course $164^{\circ}T$, and your speed is 13.5 knots. Local apparent noon (LAN) occurs at 1215 ZT, at which time a meridian altitude of the Sun's lower limb is observed. The observed altitude (H_o) for this sight is $49^{\circ}46.0'$. What is the latitude at 1200 ZT?
- A. $21^{\circ}42.5'N$
 - B. $21^{\circ}39.3'N$
 - C. $21^{\circ}36.0'N$
 - D. $21^{\circ}32.8'N$

Correct answer: A

8. A vessel steams 1650 miles on course $077^{\circ}T$ from LAT $12^{\circ}47'N$, LONG $45^{\circ}10'E$. What is the latitude and longitude of the point of arrival by Mercator sailing?
- A. LAT $19^{\circ}02'N$, LONG $72^{\circ}44'E$
 - B. LAT $18^{\circ}54'N$, LONG $72^{\circ}58'E$
 - C. LAT $19^{\circ}06'N$, LONG $72^{\circ}36'E$
 - D. LAT $18^{\circ}58'N$, LONG $72^{\circ}52'E$

Correct answer: D

9. In the horizon system of coordinates what is equivalent to the poles on the Earth?
- A. Nodes
 - B. Zenith, nadir
 - C. Celestial poles
 - D. Ecliptic poles

Correct answer: B

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10. Your 0900 DR position is LAT $23^{\circ}16'N$, LONG $146^{\circ}12'E$. Your vessel is on a course of $286^{\circ}T$, at a speed of 14.5 knots. Determine the zone time of LAN on 14 March.

- A. 1151
- B. 1209
- C. 1223
- D. 1228

Correct answer: D