

U.S.C.G. Merchant Marine Exam

Master or Mate Less than 200 Gross Registered Tons

Q154-Navigation Problems-Oceans

(Sample Examination)

Choose the best answer to the following Multiple Choice Questions.

1. The distance in miles between the circle of equal altitude for the observed altitude (H_o) and the circle of equal altitude for the computed altitude (H_c) is the _____.
- (A) intercept
 - (B) zenith distance
 - (C) zenith angle
 - (D) equation of time

If choice A is selected set score to 1.

2. Your 0745 ZT 15 July position is LAT $29^{\circ}04.0'N$, LONG $71^{\circ}17.5'W$. You are on course $165^{\circ}T$, and your speed is 8.0 knots. You observed 3 morning sun lines. Determine the latitude and longitude of your 1130 running fix?

Zone Time	GHA	Observed Altitude	Declination
0830	$21^{\circ}01.8'$	$44^{\circ}16.4'$	N $21^{\circ}29.2'$
0930	$36^{\circ}01.7'$	$57^{\circ}25.5'$	N $21^{\circ}28.8'$
1130	$66^{\circ}01.6'$	$81^{\circ}30.2'$	N $21^{\circ}28.0'$

- (A) LAT $28^{\circ}35.0'N$, LONG $71^{\circ}08.5'W$
- (B) LAT $28^{\circ}39.8'N$, LONG $71^{\circ}04.0'W$
- (C) LAT $28^{\circ}40.5'N$, LONG $71^{\circ}13.0'W$
- (D) LAT $28^{\circ}43.3'N$, LONG $71^{\circ}02.5'W$

If choice A is selected set score to 1.

3. On 10 April, your 1630 ZT DR position is LAT $21^{\circ}03.0'N$, LONG $63^{\circ}11.0'W$. You are on course $324^{\circ}T$ at a speed of 22 knots. What will be the zone time of sunset at your vessel?
- (A) 1805
 - (B) 1814
 - (C) 1818
 - (D) 1833

If choice D is selected set score to 1.

4. You are on course $238^{\circ}T$. To check the course of your vessel you should observe a celestial body on which bearing?
- (A) 180°
 - (B) 238°
 - (C) 328°
 - (D) 090°

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If choice C is selected set score to 1.

5. On 12 July your 0800 ZT DR position is LAT 24°15.0'N, LONG 132°30.0'W. Your vessel is on course 045°T at a speed of 15.0 knots. What is the ZT of local apparent noon (LAN)?
- (A) 1146
 - (B) 1148
 - (C) 1152
 - (D) 1159

If choice C is selected set score to 1.

6. The great circle distance from LAT 35°08.0'S, LONG 19°26.0'E to LAT 33°16.0'S, LONG 115°36.0'E is 4559 miles and the initial course is 121°T. Determine the longitude of the vertex.
- (A) 72°18.3'E
 - (B) 69°19.1'E
 - (C) 65°45.9'E
 - (D) 26°50.9'E

If choice C is selected set score to 1.

7. While steaming at 17.0 knots, your vessel consumes 382 barrels of fuel oil per day. In order to reduce consumption to 223 barrels of fuel oil per day, what is the maximum speed the vessel can turn for?
- (A) 14.2 knots
 - (B) 13.0 knots
 - (C) 9.9 knots
 - (D) 11.8 knots

If choice A is selected set score to 1.

8. 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 true course by Mercator sailing.
- (A) 348.3°T
 - (B) 058.2°T
 - (C) 235.2°T
 - (D) 301.8°T

If choice D is selected set score to 1.

9. 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) $26^{\circ}15.4'N$

If choice D is selected set score to 1.

10. On 16 July at 2000 zone time, you take a sextant observation of Polaris. Your vessel's DR position is LAT $27^{\circ}22.0'N$, LONG $148^{\circ}35.0'W$, and your sextant reads $26^{\circ}57.5'$. Your chronometer reads 05h 59m 16s, and your chronometer error is 01m 28s slow. Your height of eye is 48 feet, and the index error for your sextant is $1.3'$ off the arc. What is the latitude of your vessel from your observation of Polaris?
- (A) $26^{\circ}52.1'N$
 - (B) $26^{\circ}58.8'N$
 - (C) $27^{\circ}36.1'N$
 - (D) $27^{\circ}43.4'N$

If choice C is selected set score to 1.