

U.S.C.G. Merchant Marine Exam
Master Less than 500-1600 Gross Registered Tons
Q127 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 26°04.0'N, LONG 129°16.0'W. 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) 1133
 - (B) 1130
 - (C) 1124
 - (D) 1127

If choice C is selected set score to 1.

2. Your vessel is steering course 299°psc, variation for the area is 7°W, and deviation is 4°W. The wind is from the southwest, producing a 3° leeway. What true course are you making good?
- (A) 291°T
 - (B) 299°T
 - (C) 296°T
 - (D) 313°T

If choice A is selected set score to 1.

3. A great circle crosses the equator at 173°E. It will also cross the equator at what other longitude?
- (A) 173°W
 - (B) 7°W
 - (C) 73°W
 - (D) 73°E

If choice B is selected set score to 1.

4. You depart LAT 38°14'N, LONG 12°42'W, for LAT 38°14'N, LONG 46°09'W. What are the course and distance by parallel sailing?
- (A) 090°T, 2879.0 miles
 - (B) 090°T, 1576.5 miles
 - (C) 270°T, 1576.5 miles
 - (D) 270°T, 2868.5 miles

If choice C is selected set score to 1.

5. Determine the great circle distance and initial course from LAT 31°57.0'S, LONG 115°52.0'E to LAT 24°47.0'N, LONG 66°59.0'E.
- (A) 4516 miles, 134.5°T
 - (B) 4402 miles, 319.5°T
 - (C) 4378 miles, 336.8°T
 - (D) 4407 miles, 314.5°T

If choice D is selected set score to 1.

6. You are planning a voyage from LAT 48°30'N, LONG 125°00'W to Korea via LAT 48°30'N, LONG 153°00'E. Which of the following track lines would you select for the safest and most direct route? (Use gnomonic tracking chart WOXZC 5270)
- (A) Parallel sailing along 48°30'N
 - (B) Great circle to LAT 51°00'N, LONG 178°00'W, parallel sailing for 80 miles, then great circle to the via point
 - (C) Rhumb line track between the two points
 - (D) Great circle track line between the two points

If choice B is selected set score to 1.

7. On 29 April your 1913 zone time DR position is LAT 22°09.0' N, LONG 56°16.0' W. At that time you observe Polaris with a sextant altitude (hs) of 22°25.8'. The chronometer time of the sight is 11h 11m 14s, and the chronometer error is 02m 18s slow. The index error is 1.5' off the arc, and the height of eye is 61.5 feet. What is your latitude by Polaris?
- (A) 22°48.8'N
 - (B) 21°39.9'N
 - (C) 22°39.9'N
 - (D) 21°55.7'N

If choice C is selected set score to 1.

8. On 15 November your 1030 ZT DR position is LAT 17°25'S, LONG 42°12'W. You are on course 059°T, speed 22 knots. Determine your 1200 position using the following observations of the Sun.

<u>ZT</u>	<u>GHA</u>	<u>DECLINATION</u>	<u>Ho</u>
1128	40°50.4'	S 18°33.6'	88°18.4'
1133	42°05.4'	S 18°33.6'	88°37.7'

- (A) LAT 17°06.8'S, LONG 41°44.3'W
- (B) LAT 17°00.0'S, LONG 41°45.8'W
- (C) LAT 17°08.9'S, LONG 41°40.4'W
- (D) LAT 17°02.1'S, LONG 41°48.4'W

If choice A is selected set score to 1.

9. On 4 December your 1500 ZT DR position is LAT 18°06.0' N, LONG 75°42.0' W. You are on course 020°T at a speed of 15.0 knots. You observed 3 celestial bodies. Determine the latitude and longitude of your 1548 running fix.

Body	Zone Time	GHA	Observed Altitude	Declination
Venus	1500	73°51.1'	48°29.5'	S 23°22.1'
Sun L/L	1524	128°25.7'	24°24.9'	S 22°18.6'
Moon L/L	1548	37°54.1'	43°24.8'	S 9°43.0'

- (A) LAT 18°10.3'N, LONG 75°34.5'W
- (B) LAT 18°12.6'N, LONG 75°42.0'W
- (C) LAT 18°17.3'N, LONG 75°37.7'W
- (D) LAT 18°14.0'N, LONG 75°40.0'W

If choice C is selected set score to 1.

10. On 10 October your 1500 zone time DR position is LAT 27°35.6' S, LONG 44°49.0' W. You are on course 342°T at a speed of 24 knots. Considering their magnitude, azimuth, and altitude, which group includes the three bodies best suited for a fix at star time?

- (A) Venus, Arcturus, Hamal
- (B) Moon, Al Na'ir, Rigil Kentaurus
- (C) Deneb, Spica, Markab
- (D) Venus, Moon, Fomalhaut

If choice B is selected set score to 1.

11. On 13 September your 1830 ZT DR position was LAT 23°03'S, LONG 105°16'E when you observe a faint unidentifiable star through a hole in the clouds. The star bore 132.3°T at a sextant altitude (hs) of 29°34.6'. The chronometer read 11h 24m 39s and is 5m 08s slow. The index error is 1.0' off the arc, and the height of eye is 52 feet. What star did you observe?

- (A) Beta Gruis
- (B) Sigma Capricorni
- (C) Alpha Indi
- (D) Scheat

If choice A is selected set score to 1.

- 12.** On 17 May your 0300 ZT DR position is LAT $27^{\circ}21.0'N$, LONG $146^{\circ}14.0'E$. You are on course $107^{\circ}T$ at a speed of 18 knots. What will be the zone time of sunrise at your vessel?
- (A) 0511
 - (B) 0522
 - (C) 0457
 - (D) 0519

If choice B is selected set score to 1.

- 13.** At 0600 ZT on 24 July your DR position is LAT $22^{\circ}37'N$, LONG $32^{\circ}45'W$. You are steering $185^{\circ}T$ at a speed of 20.0 knots. Determine the computed altitude (Hc) and azimuth (Zn) for an observation of the Sun's lower limb taken at 1030 ZT. At this time the chronometer reads 00h 30m 16s and is 0m 31s slow.
- (A) Hc $64^{\circ}27.5'$ Zn 092.3°
 - (B) Hc $64^{\circ}30.8'$ Zn 090.1°
 - (C) Hc $64^{\circ}41.7'$ Zn 087.8°
 - (D) Hc $64^{\circ}44.2'$ Zn 094.7°

If choice C is selected set score to 1.

- 14.** On 28 July your 0800 zone time (ZT) fix gives you a position of LAT $25^{\circ}16.0'N$, LONG $71^{\circ}19.0'W$. Your vessel is on course $026^{\circ}T$, and your speed is 17.5 knots. Local apparent noon (LAN) occurs at 1150 ZT, at which time a meridian altitude of the Sun's lower limb is observed. The observed altitude (Ho) for this sight is $82^{\circ}28.7'$. What is the latitude at 1200 ZT?
- (A) $26^{\circ}32.0'N$
 - (B) $26^{\circ}25.0'N$
 - (C) $26^{\circ}27.6'N$
 - (D) $26^{\circ}29.8'N$

If choice C is selected set score to 1.

- 15.** On 12 June at 0919 zone time, your position is LAT $26^{\circ}52'N$, LONG $84^{\circ}34'W$. The chronometer reads 03h 17m 00s. Chronometer error is 01m 40s slow. At that time, an azimuth of the Sun is obtained. The bearing is 089.5° per standard magnetic compass. Variation for this area is $4.5^{\circ}E$. What is the deviation of the standard magnetic compass?
- (A) $9.5^{\circ}W$
 - (B) $5.2^{\circ}W$
 - (C) $9.5^{\circ}E$
 - (D) $5.2^{\circ}E$

If choice B is selected set score to 1.