U.S.C.G. Merchant Marine Exam

Second/Third Mate of Unlimited Tonnage

Q117 Navigation Problems - Oceans

(Sample Examination)

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Illustrations: 0

Choose the best answer to the following Multiple Choice questions.

1. On 22 April your 1852 DR position is LAT 23°54.5'N, LONG 117°36.8'W. You observe an unidentified star bearing 248°T at an observed altitude (Ho) of 25°00.9'. The chronometer reads 02h 54m 53s, and is 02m 51s fast. What star did you observe?

- (A) Rigel
- (B) Arcturus
- (C) Gienah
- (D) Betelgeuse

If choice A is selected set score to 1.

2. On 15 February at 0610 ZT, in DR position LAT 56°53.0'N, LONG 157°02.9'E, you observe Polaris at a sextant altitude (hs) of 56°10.4'. The index error is 2.5' on the arc, and the height of eye is 18 meters. What is the latitude?

- (A) 56°41.8'N
- (B) 56°47.9'N
- (C) 56°48.1'N
- (D) 57°10.6'N

If choice A is selected set score to 1.

3. A vessel at LAT 28°00'N, LONG 116°00'W is to proceed to LAT 34°00'N, LONG 123°40'W. What is the course and distance by mid-latitude sailing?

- (A) 302°T, 539 miles
- (B) 324°T, 453 miles
- (C) 323°T, 428 miles
- (D) 312°T, 533 miles

If choice D is selected set score to 1.

4. While on a course of 216°pgc, a light bears 12° on the port bow at a distance of 11.2 miles. Which course should you steer to pass 2 miles abeam of the light leaving it to port?

- (A) 208°pgc
- (B) 210°pgc
- (C) 212°pgc
- (D) 214°pgc

If choice D is selected set score to 1.

5. On 8 November your 1731 zone time DR position is LAT 27°16.0'N, LONG 137°25.0'W. Considering their magnitude, azimuth, and altitude, which group includes the three stars best suited for a fix at star time?

- (A) Peacock, Ankaa, Al Na'ir
- (B) Sirius, Hamal, Dubhe
- (C) Antares, Rasalhague, Altair
- (D) Alphecca, Fomalhaut, Schedar

If choice D is selected set score to 1.

6. Your vessel is steering course 352°psc, variation for the area is 11°E, and deviation is 9°W. The wind is from the northeast, producing a 1° leeway. What true course are you making good?

- (A) 351°T
- (B) 349°T
- (C) 353°T
- (D) 355°T

If choice C is selected set score to 1.

7. On 2 April your 0830 zone time fix gives you a position of LAT 20°16.0'S, LONG 004°12.0'E. Your vessel is steaming a course of 143°T at a speed of 18.0 knots. An observation of the Sun's upper limb is made at 0903 zone time, and the observed altitude (Ho) is 42°39.6'. The chronometer reads 09h 05m 40s, and the chronometer error is 02m 15s fast. Local apparent noon occurs at 1145 zone time, and a meridian altitude of the Sun's lower limb is made. The observed altitude (Ho) for this sight is 63°46.2'. Determine the vessel's 1200 zone time position.

- (A) LAT 21°10.1'S, LONG 004°53.9'E
- (B) LAT 21°14.0'S, LONG 004°55.0'E
- (C) LAT 21°18.0'S, LONG 005°00.5'E
- (D) LAT 22°42.0'S, LONG 004°57.0'E

If choice C is selected set score to 1.

8. Determine the great circle distance and initial course from LAT 08°53.0'N, LONG 79°31.0'W to LAT 33°51.5'S, LONG 151°13.0'E.

- (A) 7809 miles, 247.0°T
- (B) 7763 miles, 247.0°T
- (C) 7618 miles, 230.3°T
- (D) 7635 miles, 233.9°T

If choice D is selected set score to 1.

9. You observe the star Deneb at a sextant altitude (hs) of 48°34.8' on 16 December. The index error is 4.0' off the arc. The height of eye is 58 feet. What is the observed altitude (Ho)?

- ○ (A) 48°02.9'
- • (B) 48°30.5'
- ○ (C) 48°31.4'
- ○ (D) 48°46.5'

If choice B is selected set score to 1.

10. You depart LAT 51°48.0'S, LONG 178°35.0'W and steam 179 miles on course 270°. What is the longitude of arrival?

- • (A) 176°36'E
- ○ (B) 173°47'W
- ○ (C) 174°27'E
- ○ (D) 179°52'W

If choice A is selected set score to 1.

11. On 10 November your 1630 zone time DR position is LAT 25°10.0'N, LONG 71°12.0'W. You are on course 335°T at a speed of 24 knots. What will be the zone time of sunset at your vessel?

- ○ (A) 1650
- • (B) 1700
- ○ (C) 1715
- ○ (D) 1730

If choice B is selected set score to 1.

12. On 7 February your 0800 zone time DR position is LAT 22°16.0'N, LONG 92°26.0'W. Your vessel is on course 270°T at a speed of 20.0 knots. What is the zone time of local apparent noon (LAN)?

- ○ (A) 1218
- ○ (B) 1222
- ○ (C) 1226
- • (D) 1230

If choice D is selected set score to 1.

13. On 5 May your 1600 zone time DR position is LAT 17°28' S, LONG 143°39' E. You are on course 316°T at a speed of 17 knots. You observed 3 celestial bodies. Determine the latitude and longitude of your 1800 running fix.

Body	Zone Time	GHA	Observed Altitude	Declination
Avoir	1727	209°18.2'	47°24.4'	S 59°27.3'
Regulus	1732	184°14.7'	46°35.2'	N 12°03.6'
Betelgeuse	1738	249°03.6'	49°41.5'	N 7°24.1'

- (A) LAT 17°05.2'S, LONG 143°11.4'E
- (B) LAT 17°07.8'S, LONG 143°17.5'E
- (C) LAT 17°08.2'S, LONG 143°07.9'E
- (D) LAT 17°09.7'S, LONG 143°10.1'E

If choice A is selected set score to 1.

14. On 22 February your 2045 ZT position is LAT 33°19'N, LONG 52°06'W. You observe Polaris bearing 358.1°pgc. At the time of the observation the helmsman noted that he was heading 048°pgc and 065°psc. The variation is 19°W. What is the deviation for that heading?

- (A) 1°E
- (B) 3°E
- (C) 1°W
- (D) 3°W

If choice B is selected set score to 1.

15. On 16 September your 0600 ZT fix gives you a position of LAT 29°47.2'N, LONG 65°28.4'W. Your vessel is on course 242°T and your speed is 13.5 knots. Local apparent noon (LAN) occurs at 1227 ZT, at which time a meridian altitude of the Sun's lower limb is observed. The observed altitude (Ho) for this sight is 63°25.3'. What is the calculated latitude at LAN?

- (A) 29°07.9'N
- (B) 29°06.1'N
- (C) 29°04.7'N
- (D) 29°01.6'N

If choice C is selected set score to 1.