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U.S.C.G. Merchant Marine Exam

Mate Less than 500-1600 Gross Registered Tons

Q142 Navigation Problems - Oceans

(Sample Examination)

Choose the best answer to the following Multiple Choice questions.

1. On 20 June your 1742 zone time DR position is LAT 24°55.0' S, LONG 8°19.6' E. Considering their magnitude, azimuth, and altitude, which three stars are best suited for a fix at star time?

- ○ (A) Spica, Arcturus, Alioth
- ○ (B) Avior, Sabik, Fomalhaut
- ● (C) Regulus, Canopus, Antares
- ○ (D) Arcturus, Achernar, Pollux

If choice C is selected set score to 1.

2. You are steaming on course 168°T at a speed of 18 knots. At 1426 you sight a buoy bearing 144°T. At 1435 you sight the same buoy bearing 116°T. What is your distance off at the second bearing and predicted distance when abeam?

- ○ (A) 2.8 miles 2nd bearing, 1.8 miles abeam
- ○ (B) 3.3 miles 2nd bearing, 2.8 miles abeam
- ● (C) 2.3 miles 2nd bearing, 1.8 miles abeam
- ○ (D) 2.5 miles 2nd bearing, 2.8 miles abeam

If choice C is selected set score to 1.

3. On 12 June your 0400 ZT DR position is LAT 22°31.0'N, LONG 31°45.0'W. You are on course 240°T at a speed of 16.5 knots. What will be the zone time of sunrise at your vessel?

- ○ (A) 0507
- ○ (B) 0515
- ● (C) 0523
- ○ (D) 0645

If choice C is selected set score to 1.

4. You observe the lower limb of the Sun at a sextant altitude (hs) of 22°58.6' on 16 June. The index error is 2.0' off the arc. The height of eye is 61 feet. What is the observed altitude (Ho)?

- ● (A) 23°06.7'
- ○ (B) 23°09.9'
- ○ (C) 23°15.4'
- ○ (D) 23°22.2'

If choice A is selected set score to 1.

5. On 3 January your 1759 zone time DR position is LONG 60°53.2' W. At that time you observe
    Polaris with a sextant altitude (hs) of 22°55.8'. The chronometer time of the sight is 09h 57m 10s,
    and the chronometer error is 02m 26s slow. The index error is 2.9' off the arc, and the height of eye
    is 52.5 feet. What is your latitude by Polaris?

    ○   (A) 21°35.2'N
    ○   (B) 21°52.5'N
    ●   (C) 22°03.6'N
    ○   (D) 22°22.6'N

    If choice C is selected set score to 1.

6. You depart LAT 15°48'N, LONG 174°06'E and steam 905 miles on course 090°. What is the LONG
    of arrival?

    ○   (A) 172°47'W
    ●   (B) 170°13'W
    ○   (C) 165°41'W
    ○   (D) 179°06'E

    If choice B is selected set score to 1.

7. On 3 October your 2122 ZT position is LAT 26°32'N, LONG 84°26'W. You observe Polaris bearing
    359.8°pgc. At the time of the observation the helmsman noted that he was heading 106°pgc and
    107°psc. The variation is 0°. What is the deviation for that heading?

    ○   (A) 1°E
    ●   (B) 0°
    ○   (C) 1°W
    ○   (D) 2°W

    If choice B is selected set score to 1.

8. On 24 October your 0100 DR position is LAT 27°42' N, LONG 158°35' E. You are on course 085°T at a speed of 12 knots. You observed 3 celestial bodies. Determine the latitude and longitude of your 0700 running fix.

Body	Zone Time	GHA	Observed Altitude	Declination
Rigel	0558	238°11.2'	38°39.5'	S 08°13.2'
Capella	0600	238°16.1'	55°15.1'	N 45°58.7'
Denebola	0604	141°05.0'	33°39.8'	N 14°40.6'

- ○ (A) LAT 27°48.8'N, LONG 160°12.5'E
- ○ (B) LAT 27°52.5'N, LONG 160°18.2'E
- ● (C) LAT 27°56.0'N, LONG 159°47.3'E
- ○ (D) LAT 27°58.4'N, LONG 159°43.5'E

If choice C is selected set score to 1.

9. Determine the great circle distance and initial course from LAT 25°47.0'N, LONG 79°59.5'W to LAT 38°42.0'N, LONG 09°10.5'W.

- ● (A) 3588.6 miles, 059°T
- ○ (B) 3341.0 miles, 063°T
- ○ (C) 3347.0 miles, 063°T
- ○ (D) 3427.8 miles, 061°T

If choice A is selected set score to 1.

10. On 14 January your 0550 DR position is LAT 25°26.0'N, LONG 38°16.0'W. You observe an unidentified star bearing 043°T at an observed altitude (Ho) of 37°12.1'. The chronometer reads 08h 48m 51s, and is 01m 22s slow. What star did you observe?

- ○ (A) Gienah
- ○ (B) Gacrux
- ○ (C) Kochab
- ● (D) Eltanin

If choice D is selected set score to 1.

11. On 12 September your 0600 zone time (ZT) fix gives you a position of LAT 22°51.9'N, LONG 133°40.1'W. Your vessel is on course 062°T, and your speed is 12.3 knots. Local apparent noon (LAN) occurs at 1142 ZT, at which time a meridian altitude of the Sun's upper limb is observed. The observed altitude (Ho) for this sight is 70°33.2'. What is the calculated latitude at LAN?

- ○ (A) 23°23.0'N
- ● (B) 23°24.8'N
- ○ (C) 23°26.5'N
- ○ (D) 23°27.9'N

If choice B is selected set score to 1.

12. You depart LAT 28°55.0'N, LONG 89°10.0'W, enroute to LAT 24°25.0'N, LONG 83°00.0'W. What is the true course and distance by mid-latitude sailing?

- ○ (A) 418 miles, 122°T
- ● (B) 427 miles, 129°T
- ○ (C) 442 miles, 122°T
- ○ (D) 436 miles, 133°T

If choice B is selected set score to 1.

13. On 8 February your 0800 zone time position is LAT 21°55'S, LONG 52°27'W. Your vessel is on course 056°T at a speed of 17.5 knots. An observation of the Sun's lower limb is made at 0938 zone time, and the observed altitude (Ho) is 46°06.5'. The chronometer reads 12h 37m 23s, and the chronometer error is 1m 24s slow. LAN occurs at 1243 zone time, and a meridian altitude of the Sun's lower limb is made. The observed altitude (Ho) for this sight is 83°56.1'. Determine the vessel's 1200 zone time position.

- ○ (A) LAT 20°57.0'S, LONG 51°21.5'W
- ○ (B) LAT 20°58.0'S, LONG 51°25.5'W
- ○ (C) LAT 21°04.0'S, LONG 51°12.0'W
- ● (D) LAT 21°04.0'S, LONG 51°21.5'W

If choice D is selected set score to 1.

14. You desire to make good a true course of 007°. The variation is 5°E, magnetic compass deviation is 3°W, and gyrocompass error is 2°E. A southwest by west wind produces a 2° leeway. What is the course to steer per standard magnetic compass to make the true course good?

- ● (A) 003°psc
- ○ (B) 005°psc
- ○ (C) 007°psc
- ○ (D) 009°psc

If choice A is selected set score to 1.

15. On 3 October your 0830 zone time DR position is LAT 26°15.0'S, LONG 73°16.0'E. Your vessel is on course 280°T at a speed of 19.0 knots. What is the zone time of local apparent noon (LAN)?

- • (A) 1201
- o (B) 1158
- o (C) 1155
- o (D) 1152

If choice A is selected set score to 1.