

U.S.C.G. Merchant Marine Exam
Mate Offshore Supply Vessels
Q215 Navigation Problems – Oceans
(Sample Examination)

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

1. At 0915 ZT on 26 July you depart Yokohama, LAT $35^{\circ}27.0'N$, LONG $139^{\circ}39.0'E$ (ZD -9). You are bound for Seattle, LAT $47^{\circ}36.0'N$, LONG $122^{\circ}22.0'W$, and you estimate your speed of advance at 14 knots. The distance is 4,245 miles. What is your estimated ZT of arrival at Seattle?
- A. 0728, 7 August
 - B. 1528, 7 August
 - C. 0028, 8 August
 - D. 1528, 8 August

Correct answer: A

2. At 0500 zone time on 21 August, your DR position is LAT $47^{\circ}00'N$, LONG $125^{\circ}15'W$. You are steering $000^{\circ}T$ at a speed of 9.8 knots. What is the zone time of sunrise?
- A. 0525
 - B. 0529
 - C. 0531
 - D. 0535

Correct answer: A

3. On 7 November your 0830 zone time fix gives you a position of LAT $27^{\circ}36.0'N$, LONG $162^{\circ}19.0'W$. Your vessel is on course $289^{\circ}T$ and your speed is 19.0 knots. Local apparent noon (LAN) occurs at 1138 zone time, at which time a meridian altitude of the Sun's lower limb is observed. The observed altitude (Ho) for this sight is $45^{\circ}35.0'$. What is the latitude at 1200 ZT?
- A. $27^{\circ}55.1'N$
 - B. $27^{\circ}57.2'N$
 - C. $27^{\circ}59.5'N$
 - D. $28^{\circ}01.9'N$

Correct answer: C

4. The great circle distance from LAT $38^{\circ}17.0'N$, LONG $123^{\circ}16.0'W$ to LAT $35^{\circ}01.0'N$, LONG $142^{\circ}21.0'E$ is 4330 miles and the initial course is $300.9^{\circ}T$. The latitude of the vertex is $47^{\circ}40.5'N$. What is the longitude of the vertex?
- A. $167^{\circ}18.5'W$
 - B. $173^{\circ}04.6'W$
 - C. $167^{\circ}18.0'E$
 - D. $173^{\circ}04.6'E$

Correct answer: A

5. On 17 March your 0520 DR position is LAT $27^{\circ}23.0'N$, LONG $39^{\circ}42.0'W$. You observe an unidentified star bearing $313^{\circ}T$ at an observed altitude (Ho) of $43^{\circ}03.8'$. The chronometer reads 08h 22m 15s and is 01m 45s fast. What star did you observe?
- A. Alkaid
 - B. Deneb
 - C. Arcturus
 - D. Altair

Correct answer: A

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6. On 3 October your 0330 zone time (ZD + 5) DR position is LAT 47°41'N, LONG 86°49'W. At that time, you observe Polaris bearing 357.5°pgc. The chronometer time of the observation is 08h 32m 04s, and the chronometer is 0m 27s slow. The variation is 5.5°W. What is the gyro error?
- A. 7.5°E
 - B. 5.0°E
 - C. 3.5°E
 - D. 2.0°E

Correct answer: D

7. Your vessel receives a distress call from a vessel reporting her position as LAT 35°01.0'S, LONG 18°51.0'W. Your position is LAT 35°01.0'S, LONG 21°42.0'W. Determine the true course and distance from your vessel to the vessel in distress by parallel sailing.
- A. 090°T, 140.0 miles
 - B. 090°T, 189.2 miles
 - C. 270°T, 140.0 miles
 - D. 270°T, 189.2 miles

Correct answer: A

8. At 0600 ZT on 24 July your DR position is LAT 22°37'N, LONG 32°45'W. You are steering 185°T at a speed of 20.0 knots. Determine the computed altitude (H_c) and azimuth (Z_n) 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. H_c 64°27.5' Z_n 092.3°
 - B. H_c 64°30.8' Z_n 090.1°
 - C. H_c 64°41.7' Z_n 087.8°
 - D. H_c 64°44.2' Z_n 094.7°

Correct answer: C

9. On 7 November your 0830 zone time position was LAT 27°36.0'N, LONG 162°19.0'W. Your vessel was steaming on course 289°T at a speed of 19.0 knots. An observation of the Sun's lower limb was made at 0945 ZT. The chronometer read 08h 43m 11s and was slow 01m 51s. The observed altitude (H_o) was 38°21.1'. Local Apparent Noon (LAN) occurred at 1138 zone time. The observed altitude (H_o) was 45°35.0'. What was the longitude of your 1200 zone time running fix?
- A. 163°38.8'W
 - B. 163°34.0'W
 - C. 163°30.2'W
 - D. 163°26.0'W

Correct answer: A

10. A vessel steams 580 miles on course 083°T from LAT 13°12'N, LONG 71°12'W. What are the latitude and longitude of the point of arrival by mid-latitude sailing?
- A. LAT 14°23'N, LONG 61°19'W
 - B. LAT 14°17'N, LONG 61°23'W
 - C. LAT 14°25'N, LONG 61°17'W
 - D. LAT 14°20'N, LONG 61°21'W

Correct answer: A

11. On 16 February your 1845 ZT DR position is LAT 25°50.5'N, LONG 46°24.0'W. At that time, you observe Polaris with a sextant altitude (hs) of 26°25.5'. The chronometer time of the sight is 09h 47m 30s and the chronometer error is 02m 16s fast. The index error is 2.5' off the arc, and the height of eye is 55.0 feet. What is your latitude by Polaris?
- A. 25°38.0'N
 - B. 25°44.2'N
 - C. 26°00.1'N
 - D. 26°37.5'N

Correct answer: A

12. On 26 September your 0830 zone time DR position is LAT 23°04.0'N, LONG 129°16.0'E. 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. 1158
 - B. 1205
 - C. 1210
 - D. 1214

Correct answer: C

13. You desire to make good a true course of 174°. The variation is 17°W, magnetic compass deviation is 4°W, and gyrocompass error is 4°E. A west-southwest wind produces a 4° leeway. What is the course to steer per standard magnetic compass to make the true course good?
- A. 203°psc
 - B. 195°psc
 - C. 199°psc
 - D. 197°psc

Correct answer: C

14. On 19 November your 0200 zone time DR position is LAT 18°41'N, LONG 150°37'E. You are on course 014°T at a speed of 18 knots. You observed 3 celestial bodies. Determine the latitude and longitude of your 0600 running fix.

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BODY	ZONE TIME	GHA	OBSERVED ALTITUDE (Ho)	DECLINATION
Arcturus	0532	137°03.2'	22°34.9'	N 19°16.7'
Suhail	0537	215°10.4'	26°45.6'	S 43°21.2'
Capella	0538	273°25.1'	31°43.5'	N 45°58.7'

- A. LAT 19°45.4'N, LONG 150°52.6'E
- B. LAT 19°42.8'N, LONG 150°56.9'E
- C. LAT 19°41.2'N, LONG 150°46.3'E
- D. LAT 19°39.3'N, LONG 150°51.8'E

Correct answer: A

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15. On 28 February your 1850 zone time DR position is LAT $27^{\circ}49.0'N$, LONG $159^{\circ}24.0'W$. Considering their magnitude, azimuth, and altitude, which group includes the three stars best suited for a fix at star time?
- A. Sirius, Mirfak, Elnath
 - B. Bellatrix, Vega, Regulus
 - C. Rigel, Schedar, Regulus
 - D. Hamal, Alkaid, Canopus

Correct answer: C