

U.S.C.G. Merchant Marine Exam  
Master/Chief Mate Offshore Supply Vessels  
Q207 Navigation Problems – Oceans  
(Sample Examination)

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

1. On 14 March your 1846 ZT DR position is LAT 21°57.6' N, LONG 132°16.2' W. At that time, you observe Polaris with a sextant altitude (hs) of 22°16.8'. The chronometer time of the sight is 03h 45m 10s, and the chronometer error is 01m 32s slow. The index error is 3.2' off the arc, and the height of eye is 44.9 feet. What is your latitude by Polaris?
- A. 21°32.4'N
  - B. 21°49.8'N
  - C. 21°51.0'N
  - D. 21°53.1'N

Correct answer: B

2. On 19 July your 1500 ZT DR position is LAT 28°25.0'N, LONG 120°28.0'W. You are on course 233°T at a speed of 10 knots. What will be the zone time of sunset at your vessel?
- A. 1842
  - B. 1853
  - C. 1901
  - D. 1909

Correct answer: C

3. In which situation does a great circle track provides the maximum saving in distance?
- A. On easterly courses in high latitudes
  - B. On southerly courses in high latitudes
  - C. On easterly courses in low latitudes that cross the equator
  - D. On westerly courses in low latitudes

Correct answer: A

4. On 2 October your 1845 DR position was LAT 28°09.2'S, LONG 167°48.1'E. You observe a faint star through a hole in the clouds at a sextant altitude (hs) of 20°45.6' T, bearing 201.5°T. The index error is 1.3' off the arc, and the height of eye is 42 feet. The chronometer reads 07h 46m 19s and is 00m 51s fast. What star did you observe?
- A. Beta Corvi
  - B. Cor Caroli
  - C. Alpha Muscae
  - D. Muhlifain

Correct answer: C

5. You observe the lower limb of the Sun at a sextant altitude (hs) of 45°49.7' on 13 November. The index error is 1.0' on the arc. The height of eye is 61 feet (18.6 meters). What is the observed altitude (Ho)?
- A. 45°59.3'
  - B. 45°56.4'
  - C. 45°52.9'
  - D. 45°49.8'

Correct answer: B

6. Determine the distance from LAT 63°54.0'N, LONG 04°52.0'E to LAT 63°54.0'N, LONG 18°24.0'W by parallel sailing.
- A. 608.6 miles
  - B. 610.9 miles
  - C. 612.3 miles
  - D. 614.2 miles

Correct answer: D

7. Using gnomonic tracking chart WOXZC 5270, determine which of the following statements about a voyage from San Francisco to San Bernardino Strait (LAT 13°00'N, LONG 125°30'E) is TRUE.
- A. The entire track line is west of the Northern Hemisphere vertex.
  - B. A composite sailing should be used to avoid the Bonin Islands.
  - C. You will cross the Northern Hemisphere vertex at the approximate longitude of 159°W.
  - D. Distance is measured using the length of a degree of longitude at the point of tangency.

Correct answer: C

8. On 10 July your 0930 zone time DR position is LAT 26°31.0'S, LONG 4°41.0'E. Your vessel is on course 308°T at a speed of 22.0 knots. What is the zone time of local apparent noon (LAN)?
- A. 1144
  - B. 1149
  - C. 1153
  - D. 1159

Correct answer: B

9. On 18 May your 1030 ZT DR position is LAT 18°30'N, LONG 62°31'W. You are on course 286°T, speed 24 knots. Determine your 1200 position using the following observations of the Sun.

NP-0101

Zone Time	GHA	Declination	Ho
1204	61°54.6'	N 19°37.6'	88°39.7'
1210	63°24.6'	N 19°37.7'	88°59.2'

- A. LAT 18°33.6'N, LONG 62°54.3'W
- B. LAT 18°35.2'N, LONG 62°49.7'W
- C. LAT 18°38.7'N, LONG 62°59.2'W
- D. LAT 18°41.1'N, LONG 62°53.9'W

Correct answer: D

10. On 28 February your 1850 zone time DR position is LAT 27°49.0'N, LONG 159°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. Hamal, Alkaid, Canopus
  - D. Rigel, Schedar, Regulus

Correct answer: D

11. Determine the great circle distance and initial course from LAT 08°36.0'N, LONG 126°17.0'E to LAT 02°12.0'S, LONG 81°53.0'W.
- A. 9015 miles, 067°T
  - B. 9076 miles, 079°T
  - C. 9076 miles, 067°T
  - D. 9105 miles, 079°T

Correct answer: B

12. 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.

NP-0014				
BODY	ZONE TIME	GHA	OBSERVED ALTITUDE (Ho)	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°14.0'N, LONG 75°40.0'W
- D. LAT 18°17.3'N, LONG 75°37.7'W

Correct answer: D

13. You desire to make good a true course of 203°. The variation is 19°E, magnetic compass deviation is 2°W, and gyrocompass error is 1°E. A westerly wind produces a 3° leeway. What is the course to steer per standard magnetic compass to make the true course good?
- A. 223°psc
  - B. 210°psc
  - C. 183°psc
  - D. 189°psc

Correct answer: D

14. On 28 July your 0800 zone time (ZT) fix gives you a position of LAT 25°16.0'N, LONG 71°19.0'W. Your vessel is on course 026°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°28.7'. What is the latitude at 1200 ZT?
- A. 26°25.0'N
  - B. 26°27.6'N
  - C. 26°29.8'N
  - D. 26°32.0'N

Correct answer: B

**15.** 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