Keep 'em Safe, Keep 'em Sailing



U.S.C.G. Merchant Marine Exam Second/Third Mate of Unlimited Tonnage Q117 Navigation Problems – Oceans (Sample Examination)

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

- 1. Determine the distance from LAT 19°54.0'N, LONG 166°36.0'E to LAT 19°54.0'N, LONG 157°54.0'W, by parallel sailing.
 - A. 2204.6 miles
 - B. 2006.9 miles
 - C. 2002.8 miles
 - D. 1990.6 miles

Correct answer: C

- 2. A vessel steams 640 miles on course 047°T from LAT 34°45'N, LONG 140°00'E. What are the latitude and longitude of the point of arrival by mid-latitude sailing?
 - A. LAT 41°57'N, LONG 150°02'E
 B. LAT 42°06'N, LONG 149°53'E
 C. LAT 42°01'N, LONG 149°57'E
 - D. LAT 42°09'N, LONG 149°50'E

Correct answer: C

- 3. On 3 December evening twilight for your vessel will occur at 1901 zone time. Your vessel's DR position will be LAT 24°18.5' S, LONG 110°30.6' W. Considering their magnitude and location, what are the three stars best suited to observe for a fix at star time?
 - A. Antares, Fomalhaut, Mirfak
 - B. Alpheratz, Achernar, Nunki
 - C. Canopus, Hamal, Deneb
 - D. Rigel, Canopus, Regulus

Correct answer: B

- 4. Determine the great circle distance and initial course from LAT 35°08.0'S, LONG 19°26.0'E to LAT 33°16.0'S, LONG 115°36.0'E.
 - A. 4682 miles, 059°T
 - B. 4457 miles, 126°T
 - C. 4559 miles, 121°T
 - D. 4688 miles, 126°T

 On 10 August your 0430 ZT position is LAT 29°56.7'S, LONG 139°11.0'E. Your course is 321°T, speed 18.2 knots. You observed 3 celestial bodies. Determine the latitude and longitude of your 0500 running fix.

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BODY	ZONE TIME	GHA	OBSERVED ALTITUDE (Ho)	DECLINATION
Fomalhaut	0452	272°03.3'	46°05.3'	S 29°43.1'
Canopus	0459	162°05.5'	41°48.9'	S 52°41.0'
Achernar	0510	236°28.2'	60°26.5'	S 57°19.6'

- A. LAT 29°46.0'S, LONG 138°54.0'E
- B. LAT 29°49.2'S, LONG 138°57.0'E
- C. LAT 29°56.0'S, LONG 139°03.8'E
- D. LAT 30°07.5'S, LONG 138°55.2'E

Correct answer: B

- 6. 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

Correct answer: B

- 7. On 20 September your 0730 zone time position was LAT 28°58.0'N, LONG 152°26.0'W. Your vessel was steaming on course 225°T at a speed of 19.0 knots. An observation of the Sun's lower limb was made at 0931 ZT. The chronometer read 07h 29m 20s and was slow 02m 22s. The observed altitude (Ho) was 44°14.4'. LAN occurred at 1206 zone time. The observed altitude (Ho) was 62°49.5'. What was the longitude of your 1200 zone time running fix?
 - A. LONG 153°32.5'W
 - B. LONG 153°27.2'W
 - C. LONG 153°23.5'W
 - D. LONG 153°20.0'W

Correct answer: C

- 8. On 1 July your 0515 ZT fix gives you a position of LAT 24°36.0'S, LONG 151°42.0'W. Your vessel is on course 300°T, and your speed is 10.0 knots. Local apparent noon (LAN) occurs at 1215 ZT, at which time a meridian altitude of the Sun's lower limb is observed. The observed altitude (Ho) for this sight is 42°55.0'. What is the calculated latitude at LAN?
 - A. 24°03.6'S
 - B. 24°02.5'S
 - C. 24°01.0'S
 - D. 24°00.0'S

- 9. Your vessel is steering 195° per standard magnetic compass. Variation for the area is 13°W, and the deviation is 4°E. The wind is from the west-southwest, producing a 2° leeway. Which true course are you making good?
 - A. 178°T
 - B. 180°T
 - C. 182°T D. 184°T

Correct answer: D

- 10. On 14 March at 1845 ZT, you take a sextant observation of Polaris. Your DR position is LAT 29°10'N, LONG 154°30'W, and your sextant reads 29°53.5'. Your chronometer reads 04h 42m 36s, and the chronometer error is 02m 24s slow. Your height of eye is 24 feet, and the index error is 1.3' off the arc. Determine the latitude by Polaris.
 - A. 29°11.7'N
 - B. 29°15.5'N
 - C. 29°18.0'N
 - D. 29°21.3'N

Correct answer: D

- 11. On 3 May your 1009 zone time DR position is LAT 30°01.0'N, LONG 123°15.0'W. Your vessel is on course 330°T at a speed of 8.6 knots. What is the zone time of local apparent noon (LAN)?
 - A. 1206
 - B. 1208C. 1211

 - D. 1214

Correct answer: C

- 12. You observe the lower limb of the Sun at a sextant altitude (hs) of 38°07.5' on 8 August. The index error is 5.2' off the arc. The height of eye is 72 feet (22 meters). What is the observed altitude (Ho)?
 - A. 38°08.4'
 - B. 38°13.3'
 - C. 38°19.2'
 - D. 38°23.4'

Correct answer: C

- 13. On 22 February your 1857 DR position is LAT 23°46.0'S, LONG 93°16.5'E. You observe an unidentified star bearing 126°T at an observed altitude (Ho) of 40°21.5'. The chronometer reads 01h 00m 35s and is 03m 25s fast. What star did you observe?
 - A. Avior
 - B. Miaplacidus
 - C. Suhail
 - D. Adhara

- 14. You are steering 257°T, and a light is picked up dead ahead at a distance of 13.3 miles at 2016. You change course to pass the light 4 miles off abeam to starboard. If you are making 18.5 knots, what is your ETA at the position 4 miles off the light?
 - A. 2103
 - B. 2100
 - C. 2113
 - D. 2057

Correct answer: D

- 15. At 1730 zone time, on 3 March, your DR position is LAT 16°00'S, LONG 80°00'W. You are steering 000°T at a speed of 7.5 knots. What is the zone time of sunset?
 - A. 1829
 - B. 1834
 - C. 1843
 - D. 1852