

U.S.C.G. Merchant Marine Exam
Second/Third Mate of Unlimited Tonnage
Q116 Navigation Problems – Near Coastal
(Sample Examination)

Choose the best answer to the following Multiple Choice questions.

1. If the speed necessary for reaching port at a designated time is 17.4 knots and the pitch of the propeller is 25.6 feet, how many revolutions per minute will the shaft have to turn, assuming a 3% positive slip?
- (A) 67 RPM
 - (B) 75 RPM
 - (C) 63 RPM
 - (D) 71 RPM

If choice D is selected set score to 1.

2. On 23 March 1983, at Kingston Point, NY, what is the earliest time after 1700 EST (ZD +5) that the predicted tide will be +2.0 feet?
- (A) 1730
 - (B) 1800
 - (C) 1854
 - (D) 2030

If choice C is selected set score to 1.

3. On 10 February in DR position LAT 25°32.0'N, LONG 135°15.0'E, you observe an amplitude of the Sun. The Sun's center is on the celestial horizon and bears 109°psc. The chronometer reads 09h 43m 25s and is 03m 20s fast. Variation in the area is 4.5°W. What is the deviation of the standard magnetic compass?
- (A) 1.6°E
 - (B) 2.9°W
 - (C) 10.5°E
 - (D) 30.5°W

If choice A is selected set score to 1.

4. You are on a voyage from Limoy, Costa Rica to Los Angeles, CA. The distance from departure to arrival is 3150 miles. The speed of advance is 14.0 knots. You estimate 24.0 hours for bunkering at Colon, and 12.0 hours for the Panama Canal transit. If you take departure at 1836 hours (ZD +6), 28 January, what is your ETA (ZD +8) at Los Angeles?
- (A) 1736, 9 February
 - (B) 1736, 8 February
 - (C) 1336, 8 February
 - (D) 0536, 8 February

If choice C is selected set score to 1.

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5. If the pitch of the propeller is 26.7 feet, and the revolutions per day are 131,717, calculate the day's run allowing 4% negative slip.
- (A) 555.2 miles
 - (B) 601.6 miles
 - (C) 578.4 miles
 - (D) 649.4 miles

If choice B is selected set score to 1.

6. On 9 February your 0739 zone time DR position is LAT 23°31.0'N, LONG 143°41.0'E. At that time, you observe the Sun bearing 104.5°psc. The chronometer reads 09h 37m 12s, and the chronometer error is 01m 52s slow. The variation is 3.5°W. What is the deviation of the standard magnetic compass?
- (A) 1.6°E
 - (B) 2.3°W
 - (C) 5.1°W
 - (D) 8.6°E

If choice D is selected set score to 1.

7. What will be the velocity and direction of the tidal current at Mobile River Entrance, AL, at 0915 CDT (ZD +5) on 13 May 1983?
- (A) 0.1 knot at 333°T
 - (B) 0.3 knot at 333°T
 - (C) 0.7 knot at 151°T
 - (D) 1.8 knots at 025°T

If choice B is selected set score to 1.

8. A vessel at LAT 33°45'N, LONG 118°30'W, heads for a destination at LAT 21°15'N, LONG 157°36'W. Determine the true course and distance by Mercator sailing.
- (A) 109.8°T, 2196 miles
 - (B) 236.3°T, 2259 miles
 - (C) 250.2°T, 2216 miles
 - (D) 289.2°T, 2413 miles

If choice C is selected set score to 1.

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9. You are taking a time tick using the 1400 signal from Buenos Aires, Argentina. You hear a 0.4 second dash followed by a series of dots, noting that the 29th and the 56th to 59th dots are omitted. At the start of the following 0.4 second dash (which is followed by an 8 second pulse), the comparing watch reads 01h 59m 57s. When compared to the chronometer, the comparing watch reads 02h 00m 38s, and the chronometer reads 02h 01m 33s. What is the chronometer error?
- (A) 1m 36s fast
 - (B) 0m 52s fast
 - (C) 0m 41s slow
 - (D) 0m 03s slow

If choice B is selected set score to 1.

10. You swung ship and compared the magnetic compass against the gyrocompass to find deviation. Gyro error is 2°W. The variation is 8°W. Find the deviation on a magnetic compass heading of 166°.

HEADING	
<u>PSC</u>	<u>PGC</u>
030.5°	- 024°
061.5°	- 054°
092.0°	- 084°
122.5°	- 114°
152.0°	- 144°
181.0°	- 174°
239.5°	- 234°
269.0°	- 264°
210.0°	- 204°
298.0°	- 294°
327.5°	- 324°
358.5°	- 354°

- (A) 2.0°W
- (B) 1.5°W
- (C) 1.0°W
- (D) 0.5°W

If choice B is selected set score to 1.