U.S.C.G. Merchant Marine Exam

Mate Less than 500-1600 Gross Registered Tons

Q141 Navigation Problems – Near Coastal

(Sample Examination)

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

1. On 8 December in DR position LAT 21°56.1'S, LONG 17°21.6'E you observe an amplitude of the Sun. The Sun's center is on the celestial horizon and bears 240.5°psc. The chronometer reads 05h 27m 21s and is 00m 47s fast. Variation in the area is 3.3°E. What is the deviation of the standard magnetic compass?

    A. 1.5°W
    B. 0.3°W
    C. 0.6°E
    D. 1.5°E

    Correct answer: D

2. The propeller on a vessel has a diameter of 20.2 feet and a pitch of 19.0 feet. What would be the apparent slip if the vessel cruised 367 miles in a 24 hour day (observed distance) at an average RPM of 84?

    A. -2.9%
    B. -5.2%
    C. +5.2%
    D. +2.9%

    Correct answer: D

3. On 21 November at 2100 zone time, you depart LAT 32°12.0'N, LONG 69°26.0'W enroute to LAT 12°05.0'N, LONG 7°32.0'W. The distance is 3,519 miles, and the average speed will be 12.5 knots. What is the zone time of arrival?

    A. 1330, 3 December
    B. 1530, 3 December
    C. 1830, 3 December
    D. 1530, 4 December

    Correct answer: C

4. If the speed necessary for reaching port at a designated time is 12.6 knots and the pitch of the propeller is 13.6 feet, how many revolutions per minute will the shaft have to turn, assuming no slip?

    A. 81 RPM
    B. 85 RPM
    C. 90 RPM
    D. 94 RPM

    Correct answer: D

5. A vessel steams 1650 miles on course 077°T from LAT 12°47'N, LONG 45°10'E. What is the latitude and longitude of the point of arrival by Mercator sailing?

    A. LAT 19°06'N, LONG 72°36'E
    B. LAT 19°02'N, LONG 72°44'E
    C. LAT 18°54'N, LONG 72°58'E
    D. LAT 18°58'N, LONG 72°52'E

    Correct answer: D

6. On 21 April your 1542 zone time DR position is LAT 28°54.0'S, LONG 19°07.0'W.

    At that time, you observe the Sun bearing 299°psc.
    The chronometer reads 04h 44m 11s, and the chronometer error is 01m 54s fast.
    The variation is 3°E.
    What is the deviation of the standard compass?

    A. 0.3°W
    B. 0.4°E
    C. 2.7°W
    D. 2.7°E

    Correct answer: A

7. You swung ship and compared the magnetic compass against the gyrocompass to find deviation.
    Gyro error is 2°E. The variation is 8°W. Find the deviation on a magnetic compass heading of 234°.

NP-0112

HEADING		
PSC		PGC
030.5°	-	020°
061.5°	-	050°
092.0°	-	080°
122.5°	-	110°
152.0°	-	140°
181.0°	-	170°
210.0°	-	200°
239.5°	-	230°
269.0°	-	260°
298.0°	-	290°
327.5°	-	320°
358.5°	-	350°

    A. 2.5°W
    B. 2.5°E
    C. 1.0°W
    D. 0.5°E

    Correct answer: D

8. On 14 October 2023, you will be docking on the Southern Branch Elizabeth River, VA at the first high tide. The berth is located between NOAA reference tidal station #8638660 and reference station #8639348. What time (LST) will you be docking? See illustration D063NG.

    A. 0946
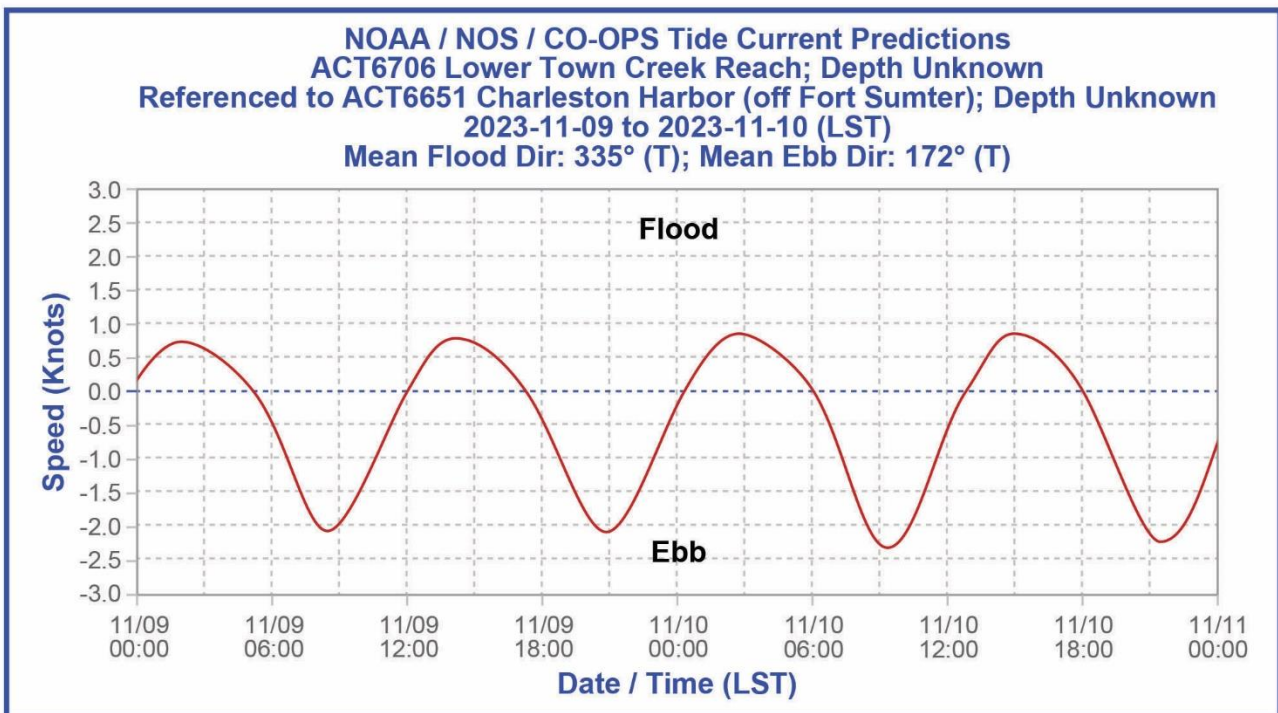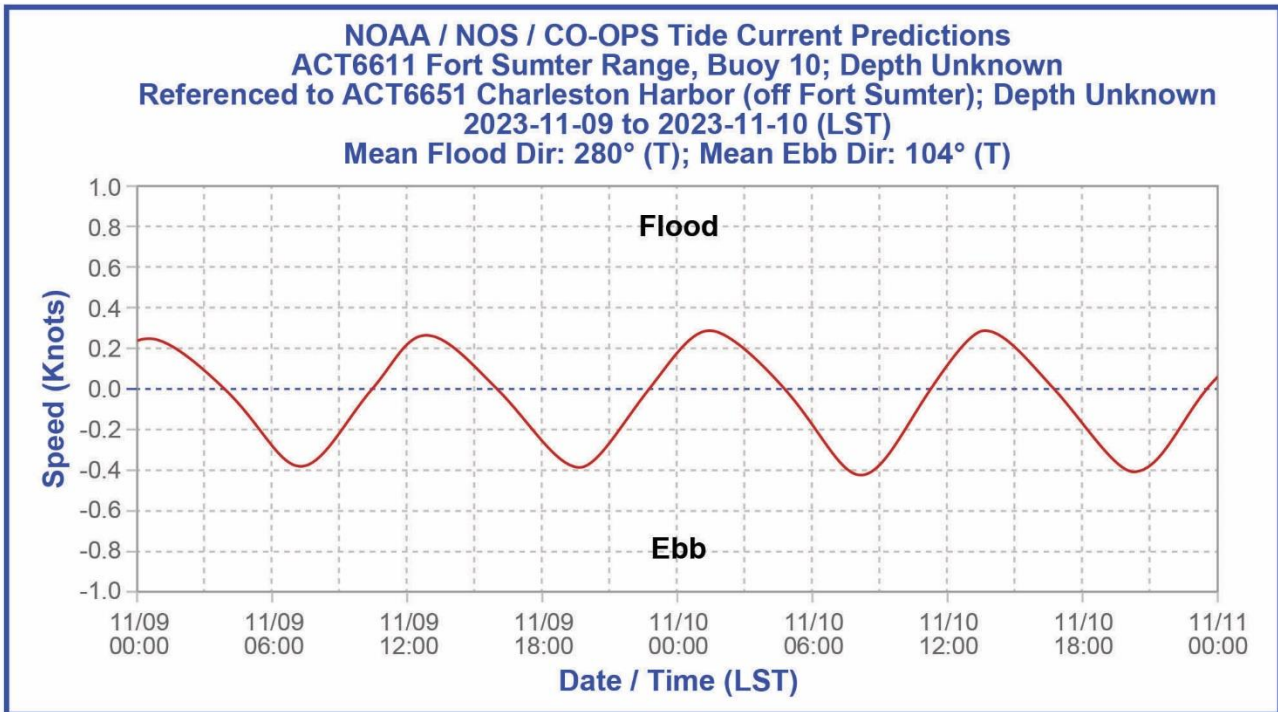   B. 0845
    C. 0848
    D. 0840

    Correct answer: B

9. On 9 November 2023 at 1630, you are inbound at Charleston Harbor Entrance Buoy "10" (ACT6611). What is the direction and velocity of the current you are encountering as you pass Buoy "10"? See illustration D058NG.

    A. 0.1kts at 104°T
    B. 0.2kts at 335°T
    C. 0.2kts at 172°T
    D. 0.1kts at 280°T

    Correct answer: A

10. On 12 November, you are taking a time tick using the 1600 GMT BBC Broadcast. You hear five pulses followed by a longer pulse. At the start of the longer pulse you start a stopwatch. You stop the stopwatch at the same time reading the chronometer with the following results: stopwatch 03m 19s, chronometer 15h 59m 46s. What is the chronometer error?

    A. 01m 14s slow
    B. 06m 54s slow
    C. 03m 19s fast
    D. 03m 33s slow

    Correct answer: D
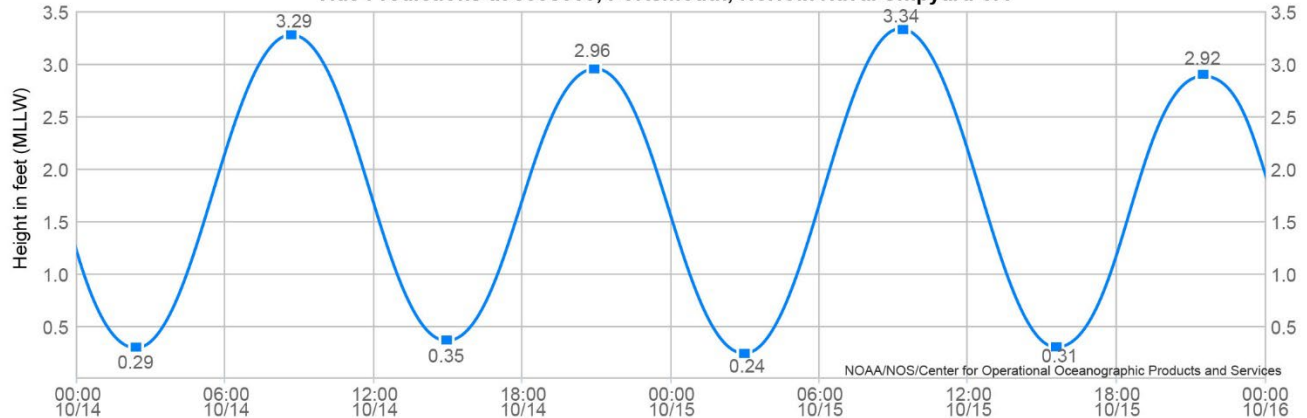
National Maritime Center

Keep 'em Safe, Keep 'em Sailing

National Maritime Center

D058NG

NOAA / NOS / CO-OPS Tide Current Predictions
ACT6611 Fort Sumter Range, Buoy 10; Depth Unknown
Referenced to ACT6651 Charleston Harbor (off Fort Sumter); Depth Unknown
2023-11-09 to 2023-11-10 (LST)
Mean Flood Dir: 280° (T); Mean Ebb Dir: 104° (T)

NOAA / NOS / CO-OPS Tide Current Predictions
ACT6706 Lower Town Creek Reach; Depth Unknown
Referenced to ACT6651 Charleston Harbor (off Fort Sumter); Depth Unknown
2023-11-09 to 2023-11-10 (LST)
Mean Flood Dir: 335° (T); Mean Ebb Dir: 172° (T)

National Maritime Center

Keep 'em Safe, Keep 'em Sailing

National Maritime Center

D063NG

NOAA/NOS/CO-OPS
Tide Predictions at 8638660, Portsmouth, Norfolk Naval Shipyard VA

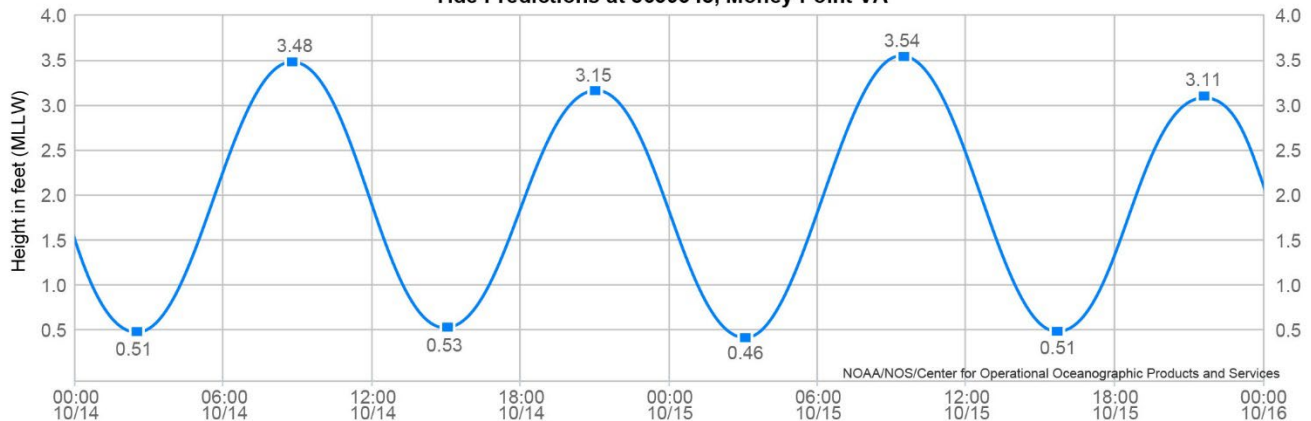**High/Low Tide Prediction Data Listing**

Station Name: Portsmouth, Norfolk Naval Shipyard, VA
Action: Daily
Product: Tide Predictions
Start Date & Time: 2023/10/14 00:00
End Date & Time: 2023/10/15 23:59

Source: NOAA/NOS/CO-OPS
Prediction Type: Harmonic
Datum: MLLW
Height Units: Feet
Time Zone: LST

Date	Day	Time	Hgt	Time	Hgt	Time	Hgt	Time	Hgt
2023/10/14	Sat	02:25	0.29 L	08:40	3.29 H	14:58	0.35 L	20:53	2.96 H
2023/10/15	Sun	03:00	0.24 L	09:17	3.34 H	15:37	0.31 L	21:32	2.92 H

NOAA/NOS/CO-OPS
Tide Predictions at 8639348, Money Point VA

High/Low Tide Prediction Data Listing

Station Name: Money Point, VA
Action: Daily
Product: Tide Predictions
Start Date & Time: 2023/10/14 00:00
End Date & Time: 2023/10/15 23:59

Source: NOAA/NOS/CO-OPS
Prediction Type: Harmonic
Datum: MLLW
Height Units: Feet
Time Zone: LST

Date	Day	Time	Hgt	Time	Hgt	Time	Hgt	Time	Hgt
2023/10/14	Sat	02:25	0.51 L	08:48	3.48 H	15:00	0.53 L	21:02	3.15 H
2023/10/15	Sun	03:01	0.46 L	09:25	3.54 H	15:40	0.51 L	21:40	3.11 H

Note: The interval is High/Low, the solid blue line depicts a curve fit between the high and low values and approximates the segments between.
Disclaimer: These data are based upon the latest information available as of the date of your request, and may differ from the published tide tables.

**Adapted for testing purposes only from National Oceanic and Atmospheric Administration (NOAA)
Tide Predictions,
https://www.tidesandcurrents.noaa.gov
Further reproduction prohibited without permission**