U.S.C.G. Merchant Marine Exam

Master/Chief Mate Unlimited Tonnage

Q104 Deck Safety-Stability Problems

(Sample Examination)

Q104-Deck Safety-Stability Problems
U.S.C.G. Merchant Marine Exam
Master/Chief Mate of Unlimited Tonnage
Illustrations: 0

Choose the best answer to the following Multiple Choice Questions.

1. The SS AMERICAN MARINER is loaded with the cargo shown in table ST-0128 below. Use the white pages of The Stability Data Reference Book to determine the amount of liquid loading required in the double bottom tanks to meet a one compartment standard.

Deck cargo	300 Tons
Upper tween deck layer	2700 Tons
Lower tween deck layer	3650 Tons
Hold layer	2650 Tons

- (A) 720 tons
- (B) 1920 tons
- (C) 895 tons
- (D) 1280 tons

If choice C is selected set score to 1.

2. Your vessel's drafts are: FWD 27'-06", AFT 28'-02"; and the KG is 23.1 feet. Use the selected stability curves in the blue pages of the Stability Data Reference Book to determine the righting arm at 37° inclination if the center of gravity is 1.8 feet off center.

- (A) 0.4 foot
- (B) 1.4 feet
- (C) 1.8 feet
- (D) 2.6 feet

If choice A is selected set score to 1.

3. Your vessel's drafts are: FWD 13'-11", AFT 16'-05". How much more cargo can be loaded to have the vessel down to the freeboard draft? (Use the information in Section 1, the blue pages, of the Stability Data Reference Book)

- (A) 7109 tons
- (B) 7316 tons
- (C) 7432 tons
- (D) 7779 tons

If choice D is selected set score to 1.

4. The SS AMERICAN MARINER has the liquid load shown in table ST-0122 below. Use the white pages of The Stability Data Reference Book to determine the LCG-FP of the liquid load.

DB 1 CL	48.2	DB 6 P	87.0
DB 1A CL	81.9	DB 6 S	87.0
DB 2 P	71.2	DB 7 P	94.6
DB 2 S	71.2	DB 7 S	94.6
DB 4 P	128.1	DT 2 P	100.7
DB 4 S	128.1	DT 2 S	100.7
DB 5 CL	196.2	DT 7 P	128.8
DB 5 P	178.0	DT 7 S	128.8
DB 5 S	180.0	DT 4 P/S	110.0
DB 6 CL	200.0	DT 5 P/S	108.4
		DIS/WATER	20.0

- (A) 271.2 ft
- (B) 291.0 ft
- (C) 288.8 ft
- (D) 305.3 ft

If choice B is selected set score to 1.

5. The floors in a vessel's hull structure are kept from tripping, or folding over, by _____.

- (A) longitudinal deck beams
- (B) bottom longitudinals
- (C) face plates
- (D) transverse deck beams

If choice B is selected set score to 1.

6. A vessel is limited to a maximum draft of 25'-11". The present drafts are: FWD 24'-10", AFT 23'-02". How much more cargo can be loaded and where should it be located if a drag of 18 inches is desired? (Use the reference material in Section 1, the blue pages, of the Stability Data Reference Book)

- (A) 690 tons 62 feet aft of the tipping center
- (B) 345 tons 124 feet aft of the tipping center
- (C) 640 tons 74 feet aft of the tipping center
- (D) 525 tons 18 feet forward of the tipping center

If choice A is selected set score to 1.

7. The SS AMERICAN MARINER is loaded with the cargo shown in table ST-0066 below. Use the white pages of The Stability Data Reference Book to determine the amount of liquid loading required in the double bottom tanks to meet a one compartment standard.

Deck cargo	280 Tons
Upper tween deck layer	1320 Tons
Lower tween deck layer	1260 Tons
Hold layer	1420 Tons

- (A) 1171.5 tons
- (B) 1311.0 tons
- (C) 1503.0 tons
- (D) 1710.5 tons

If choice B is selected set score to 1.

8. Using the information in Section 1, the blue pages, of the Stability Data Reference Book, determine the danger angle for permanent list if the KG is 25.0 feet and the drafts are: FWD 15'-04", AFT 15'-08".

- (A) 12°
- (B) 17°
- (C) 20°
- (D) 23°

If choice D is selected set score to 1.

9. Use the floodable length curve in Section 1, the blue pages, of the Stability Data Reference Book. If the curve represents 45 percent permeability and number 5 hold floods, the vessel will sink if the permeability exceeds what percent?

- (A) 66%
- (B) 70%
- (C) 74%
- (D) 79%

If choice A is selected set score to 1.

10. Your sailing drafts are: FWD 17'-07", AFT 18'-03" and the GM is 2.8 feet. What will be the angle of list if the #4 starboard double bottom (capacity 141 tons, VCG 2.6 feet, and 23.8 feet off the centerline) is filled with saltwater? (Use the data in Section 1, the blue pages, of the Stability Data Reference Book)

- (A) 6°
- (B) 8°
- (C) 10°
- (D) 12°

If choice B is selected set score to 1.

11. Your drafts are: FWD 23'-03", AFT 27'-01". Use the blue pages of the Stability Data Reference Book to determine the vessels displacement if you are in fresh water.

- (A) 12,550 tons
- (B) 12,900 tons
- (C) 13,200 tons
- (D) 13,350 tons

If choice B is selected set score to 1.

12. The SS AMERICAN MARINER is ready to bunker with drafts of FWD 13'-10", AFT 16'-04". After all bunkers are on board, soundings indicate the tonnages shown in table ST-0187 below. Use the white pages of The Stability Data Reference Book to determine the free surface correction.

DB 1 CL	40.0	DT 6 P	201.2
DB 2 P	65.0	DT 6 S	201.2
DB 2 S	65.0	DT 7 P	128.8
DB 3 CL	227.6	DT 7 S	128.8
DB 4 CL	224.1		
DB 4 P	128.1		
DB 4 S	128.1		
DB 5 CL	196.2		
DB 5 P	178.0		
DB 5 S	180.0		
DB 6 CL	242.3		

- (A) 0.96 foot
- (B) 1.07 foot
- (C) 0.73 foot
- (D) 1.30 feet

If choice C is selected set score to 1.

13. Your vessel's drafts are: FWD 14'-04", AFT 15'-02"; and the KG is 23.2 feet. Use the selected stability curves in the blue pages of the Stability Data Reference Book to determine the angle of list if the center of gravity is shifted 1.0 foot off the centerline.

- ○ (A) 9°
- • (B) 12°
- ○ (C) 15°
- ○ (D) 17°

If choice B is selected set score to 1.

14. Use the material in Section 1, the blue pages, of the Stability Data Reference Book. If the KG is 25.2 feet, and the drafts are: FWD 27'-11", AFT 28'-09"; at what angle will the vessel lose positive stability?

- • (A) 54°
- ○ (B) 59°
- ○ (C) 65°
- ○ (D) 71°

If choice A is selected set score to 1.

15. A vessel's drafts are: FWD 19'-00", AFT 17'-02". How much more cargo can be loaded to have the vessel down to the freeboard draft? (Use the information in Section 1, the blue pages, of the Stability Data Reference Book)

- ○ (A) 5928 tons
- ○ (B) 6016 tons
- • (C) 6149 tons
- ○ (D) 6242 tons

If choice C is selected set score to 1.