

Indian Maritime University
(A Central University, Govt of India)
End Semester Examinations – June 2026
Programme Name: B Tech (ME)

Semester: IV

Subject Code: UG11T5404

Subject Name: Ship Structure and Construction

Date: 11.06.2026

Max Marks: 70

Duration: 03 Hrs

Pass Marks: 35

General Instructions

- (i) All Sections (A, B & C) are to be attempted.
- (ii) Options, if any, are specified in respective section.

Section A

Choose the Correct Answer **(10 x 1 = 10 Marks)**

Ten MCQs/Fill in the Blanks of 01 Mark each – Choose the correct answer as applicable.

1. Which structural member runs longitudinally to the centre girder at the bottom of the ship's hull? **(1 Mark)**

- a) Web frames
- b) Bilge keel
- c) Intercoastal girder
- d) Deck beams

2. Torsion boxes to reduce the effect of torsional stress are fitted in **(1 Mark)**

- a) Bulk carrier
- b) Container ship
- c) General cargo ship
- d) Oil tanker

3. What is 'camber' in ship structure? **(1 Mark)**

- a) The athwartship (transverse) curvature of a deck
- b) The taper of the bow
- c) The inclination of the mast
- d) The curvature of the keel

4. Tendency of deck to move laterally w.r.t the bottom structure of a ship while rolling is called **(1 Mark)**

- a) Panting
- b) Pounding
- c) Racking
- d) Hogging

5. 'Wash plate' or swash bulkhead fitted inside a liquid cargo tank is designed to:
(1 Mark)

- a) Clean the tank interior during ballast voyages
- b) Provide additional longitudinal framing in the double bottom
- c) Increase the structural depth of the tank top
- d) Reduce dynamic sloshing loads on tank boundaries

6. Jumping clearance between rudder tip & hull is provided to (1 Mark)

- a) To protect rudder plate from damage.
- b) To protect hull from damage.
- c) To protect steering gear from damage.
- d) All of the above.

7. Which component connects the ship's main engine to the propeller shaft? (1 Mark)

- a) Stern tube
- b) Crankshaft
- c) Intermediate shaft
- d) Tail shaft

8. A controllable pitch propeller (CPP) offers which key advantage over a fixed pitch propeller (FPP)? (1 Mark)

- a) Ability to vary thrust without changing shaft speed
- b) Higher efficiency at design speed
- c) Lower manufacturing cost
- d) Reduced underwater noise

9. A bilge keel is used to reduce/dampen a ship's tendency to (1 Mark)

- a) Roll
- b) Pitch
- c) Heave
- d) All of these

10. Purpose of bulbous bow is (1 Mark)

- a) To protect forward end of ship against collision
- b) Provide extra buoyancy to hull
- c) To reduce resistance to motion and thus improve fuel economy
- d) To reduce pitching.

Section B

Answer All the Questions

(5 x 2 = 10 Marks)

11. What is Corrugated Bulkhead? **(2 Marks)**

12. What are solid floors and where are they usually installed in a ship? **(2 Marks)**

13. Why is a cable stopper provided and where is it installed? **(2 Marks)**

14. Define frame spacing? **(2 Marks)**

15. As per SOLAS , what is a Class A fire resistance type of bulkhead **(2 Marks)**

Section C

Answer any 5 Questions

(5 x 10= 50 Marks)

16. What is the difference between panting and pounding of a ship and list the structural measures taken to withstand each of the above. **(5 Marks + 5 Marks)**

17. (a) Draw and describe load line diagram with markings for different zones **(5 Marks)**

17. (b) What is the role of classification society in the design, construction & operation of vessels? **(5 Marks)**

18. Draw and identify 10 different parts of a propeller **(10 Marks)**

19. Describe with simple diagram the 3 basic type of rudder. What is the difference between rudder carrier and rudder pintle ? **(6 Marks +4 Marks)**

20. Classify different types of ship on the basis of its purpose. Write constructional features typical for each type of ship **(10 Marks)**

21. What is the difference between hawse pipe and spurling pipe? **(4 Marks)**
Draw and explain how the bitter end is attached to a bulkhead **(6 Marks)**

22. With neat diagram, explain the stern tube oil lubrication system and sealing arrangement. **(10 Marks)**

