

Indian Maritime University
(A Central University, Govt of India)

End Semester Examinations – December 2025

Programme Name: B Tech (ME)

Semester: V

Subject Code: UG11T4506

Subject Name: Ship Structure and Marine Shafting

Date: 17th December 2025

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

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

1. Torsion boxes to reduce the effect of torsional stress are fitted in
 - A) Bulk carrier
 - B) Container ship
 - C) General cargo ship
 - D) Oil tanker

2. A ship has to be certified as passenger ship, if the number of passengers carried in international voyage is more than
 - A) 20
 - B) 16
 - C) 12
 - D) 08

3. Steel is a preferred material for ship construction because of
 - A) Material strength
 - B) Easily available
 - C) Easy to work with
 - D) All of the above

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

- A) Panting
- B) Pounding
- C) Racking
- D) Hogging

5. Plate joining DB Tank top and the ship side/bilge is called

- A) Margin plate
- B) Side plate
- C) Sealing Plate
- D) Corner plate

6. Cant frames & Cant beams are required in ship with

- A) Elliptical Stern
- B) Cruiser stern
- C) Transom stern
- D) All of them

7. Pipe through which anchor chain passes from windlass to chain locker is called

- A) Hawse pipe
- B) Spurling pipe
- C) Chain pipe
- D) Anchor pipe

8. Purpose of bulbous bow is

- 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.

9. Jumping clearance between rudder tip & hull is provided to

- 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.

10. Primary aim of using muff coupling to couple propeller shaft over flanged coupling is

- A) To remove shaft outboard.
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- B) Better alignment of shaft
- C) More rigid connection
- D) None of the above.

Section B

Five Questions of 02 Marks each (All questions are compulsory)

- 11. How is access provided within ro-ro ships for vehicles and cargo?
- 12. Define frame spacing?
- 13. Define GT & NT.
- 14. What is the purpose of the bulbous bow?
- 15. What is shaft alignment and why it is crucial?

Section C

Seven Questions of 10 Marks each of which any 05 questions to be answered.

- 16. Classify different types of ship on the basis of its purpose. Write constructional features typical for (a) Bulk carrier (b) Oil tanker.
(5+5 marks)

- 17. A) With simple sketch, describe the construction of chain locker.
Explain
Functions of (a) mud box (b) foot holes in chain locker bulkhead.
(4+2 marks)

- B) What is collision bulkhead? Discuss regulations for its location and penetration.
(4 marks)

- 18. A) Sketch & Label mid ship section of a Bulk Carrier or Oil-Tankers.
(6 marks)

- B) Explain with simple sketches sealing and securing arrangement of Hatch Covers.
(4 marks)

- 19. A) Discuss advantages and disadvantages of using mild steel for ship construction. What is IACS steel? Explain grading system of High

Tensile Steel.
marks)

(4+1+2

TMI B) Write brief note on fibre reinforced composite material. **(3 marks)** TMI

20. Define static & dynamic forces on ship. How can you obtain shear stress and bending moment. Draw shear stress and bending moment diagram from the load curve of ship.
(1+3+6 marks)

21. A) What are the objectives of assigning free board and state functional requirements to realise these objectives.
(4 marks)

B). Draw and describe load line diagram with markings for different zones. TMI

(6 marks)

22.A) What is the function of stern frame. Define different types of rudder based on location of turning axis. What criteria is taken into consideration for choosing a particular type of rudder.
(2+4 marks)

B) State the functions of following:

a) Thrust block

b) Rope guard

c) Soft nose stem.

d) Bilge keel

(4 marks)

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