

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

**Supplementary Examinations – March/April 2025**

**Programme Name: B Tech (ME)**

**Semester: Fifth**

**Subject Code: UG11T4506**

**Subject Name: SHIP STRUCTURE AND MARINE SHAFTING**

Date: 17.04.2025

Max Marks: 70

Duration: 03 Hrs

Pass Marks: 35

General Instructions

- (i) Both Parts (A & B) are to be attempted.
- (ii) Options, if any, are specified in respective section.
- (iii) Use Scale and Pencil for the sketches.

**Part - A**

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

1. The decks of a vessel are supported by transverse members called \_\_\_\_\_  
a) Trusses    b) Deck longitudinal    c) Deck beams    d) Web frames
2. What is a common composite material used in modern shipbuilding, known for its high strength-to-weight ratio?  
a) Fiberglass-reinforced plastic (FRP)  
b) Aluminium alloy  
c) Plywood fiber  
d) Stainless steel
3. What defines a catamaran?  
a) Single hull vessel  
b) Vessel with two parallel hulls  
c) Vessel with three hulls  
d) Vessel with a curved hull
4. What does the term "scantling" refer to in shipbuilding?  
a) The width of a ship's hull at the waterline  
b) The measurements and dimensions of various structural components of a ship  
c) Lighter weight for the ship  
d) The length of the ship from stem to stern

5. The purpose of bilge keels is to \_\_\_\_\_
- a) lower the centre of gravity of the ship
  - b) reduce the amplitude of roll
  - c) reduce pitching
  - d) reduce yawing
6. What is the primary purpose of a swash bulkhead?
- a) To store emergency supplies
  - b) To increase the ship's speed
  - c) To reduce Free surface effect
  - d) To increase draft
7. What is the primary purpose of a tilting pad bearing in shafting?
- a) To increase friction
  - b) To evenly distribute the load and reduce friction
  - c) To decrease stability
  - d) To limit the rotational speed
8. Panting arrangements are usually found at
- a) Forward of Collision bulkhead
  - b) Aft of collision Bulkhead
  - c) Double bottom
  - d) Machinery space
9. The strake next to the keel is identified as
- a) Bilge strake
  - b) Sheer strake
  - c) Garboard Strake
  - d) Keel Strake
10. The weld joint between two plates of the same strake of hull plating is called \_\_\_\_\_.
- a) Bracket
  - b) Gusset
  - c) Seams
  - d) Butt

### Five Questions of 02 Marks each

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?

### Part - B

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

16. a) Distinguish between transverse and longitudinal framing (any three points). **(6 Marks)**  
b) Explain racking stress with the help of a neat sketch **(4 Marks)**
17. a) List any five functions of water tight bulkhead. **(5 Marks)**  
b) Sketch cleating arrangement for hatch covers. **(5 Marks)**
18. a) What is a classification society and list four functions of classification society. **(5 Marks)**  
b) Explain briefly about Oil cooled stern tube **(5 Marks)**
19. a) Explain Hogging and sagging of a ship in waves with the help of neat sketches **(4 Marks)**  
b) Sketch a solid plate floor and label the following; **(6 marks)**
  - i) Margin plate
  - ii) Intercoastal Girder
  - iii) Manhole
  - iv) Lightning Hole
  - v) Air Holes
  - vi) Drain Holes
- 20 a) Explain shell Expansion Plan? name two uses of it? **(4 Marks)**  
b) Draw neat sketch of typical midship section of a bulk carrier and label it. **(6 marks)**

21. a) Sketch and label load line marking **(4 marks)**

b) Sketch a Cast stern frame and write any two functions. **(6 marks)**

22. a) Sketch the structural arrangements in the fore-end of ship. **(7 marks)**

b) Briefly explain the types of rudder. **(3 Marks)**

