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

Mar/Apr'26 SE
Programme Name: B Tech (ME)

Semester: V

Subject Code: UG11T4506

Subject Name: SHIP STRUCTURE AND MARINE SHAFTING

Date: 10.03.2026

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 as applicable.

(10 x 1 = 10 Marks)

1. The deck area between the two cargo holds/cargo hatches of a dry cargo ship is known as :
 - a) Shelter deck
 - b) Tween deck
 - c) Cross deck
 - d) Quarter Deck

 2. In ship, raised vertical plate all around the edges of hatch opening is called:
 - a) Hatch frame
 - b) Hatch coaming
 - c) Bulwark
 - d) Half beam

 3. What is the validity of a load line certificate?
 - a) 2.5 years
 - b) 5 years
 - c) 10 years
 - d) 15 years

 4. A "Type B-60" is a ship:
 - a) Which is constructed of B-60 fire division.
 - b) Which is assigned 60% of type B tabular freeboard.
 - c) Which are rewarded with a reduction in freeboard from tabular Type B freeboard upto 60% of the difference between type A & type B tabular freeboard.
 - d) Which is made up of B-grade of steel with a minimum of 60% of the ship's structure made up of B-grade of steel or equivalent.

 5. When a vessel is experiencing compressive stress on the deck, what is its possible cause?
 - a) Hogging
 - b) Sagging
 - c) Pounding
 - d) Dynamic force
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6. Gross tonnage is mostly used for:
- determining taxes and charges levied on a vessel like harbour dues, canal dues, light dues etc.
 - determining applicability of various regulations, safety rules, crew requirements etc.
 - determining how much weight a ship can grossly carry.
 - determining the total gross weight of the ship including cargo.
7. Hatch covers are secured to the hatch coaming using:
- Cleats
 - bulldog grips
 - Wire slings
 - Bottle-screws
8. Choose the correct sequence:
- Chain locker – hawse pipe – gypsy – spurling pipe – cable stopper.
 - Chain locker – cable stopper – spurling pipe – gypsy – hawse pipe.
 - Chain locker – spurling pipe – gypsy – cable stopper – hawse pipe.
 - Chain locker – spurling pipe – cable stopper – gypsy – hawse pipe.
9. A means of protection around the upper deck edge, which prevents the crew members from falling overboard, is called:
- Pillar
 - Barrier
 - Bulwark
 - Bits
10. What is chain gypsy?
- It prevents accidental slipping of the cable in case of failure of the brake arrangement.
 - It is the sprocket wheel in a windlass, used for heaving in the anchor.
 - The first link of each anchor chain connected with the Anchor.
 - The last link of each anchor chain connected with the bulkhead.

Section B

Answer the following in brief:

(5 x 2 = 10 Marks)

- Define the term 'scantling' in ship.
- Define Stealer plate and Stringer plate.
- Explain about a Dynamic Positioning Vessel.
- Explain about sloshing and mention ways to reduce it.
- What is a cofferdam.

Section C (Answer any 5 out of 7)

- (5+5 = 10 marks)**
 - With the aid of neat sketches, explain in detail about panting & pounding stresses in ships.
 - Define stress concentration. How can it be avoided/minimized? Explain compensation for loss of strength at hatch openings.
 - (5+5 = 10 marks)**
 - Define bulkhead. Explain about various types of bulkhead.
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- b) Explain along with a neat sketch, how a plain watertight bulkhead is constructed.
- 18.** Draw half mid-ship section of a bulk carrier & mark all the structural elements. **(10 marks)**
- 19.** **(5+5 = 10 marks)**
- a) Write advantages of double bottom over single bottom in ships.
- b) Sketch section through longitudinally framed double bottom of a ship at the bracket floor.
- 20.** **(5+5 = 10 marks)**
- a) Describe the periodical surveys carried out by the classification society.
- b) Sketch load line marks for a ship & label it with appropriate dimensions.
- 21.** Draw elevation through fore end arrangement of the ship and label all the structural parts. **(10 marks)**
- 22.** Explain with a sketch, the details of oil shaft seal and stern tube bearing including their components **(10 marks)**

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