

Indian Maritime University
(A Central University, Govt of India)
End Semester Examinations – December 2024
Programme Name: B Tech (ME)
Semester: V
Subject Code: UG11T4506

Subject Name: SHIP STRUCTURE AND MARINE SHAFTING

Date: 18.12.2024

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. Bulbous bow is fitted to
 - a) improve appearance
 - b) reduce pounding effect
 - c) improve bow strength
 - d) improve propulsive efficiency
2. Name the hull structural members extending athwart ship:
 - a) Girder
 - b) Stringer
 - c) Stiffener
 - d) Floor
3. Welded joints between two adjacent strakes are called:
 - a) end joints
 - b) seems
 - c) butts
 - d) through joints
4. Which of these ships are assigned minimum freeboard?
 - a) General cargo ships
 - b) Bulk carriers
 - c) Oil tankers
 - d) Container ships
5. Winter North Atlantic (WNA) load line markings are required in:
 - a) All ships sailing in that area
 - b) Ships less than 100m length
 - c) Ships greater than 100m length
 - d) Only special purpose ships
6. A _____ vessel having a _____ and _____ ; designed for the carriage of dry-cargo in bulk is known as bulk carrier.
 - a) Single deck, upper hopper, lower hopper
 - b) Single deck, upper stool, lower stool

- c) Tween deck, crane, grab
 - d) Multi-deck, hatch cover, cranes
7. A bilge keel is used to reduce/dampen a ship's tendency to:
- a) Roll
 - b) Pitch
 - c) Heave
 - d) All of these
8. What is bitter end?
- a) It prevents accidental slipping of the cable in case of failure of the brake arrangement.
 - b) It is the sprocket wheel in a windlass, used for heaving in the anchor.
 - c) The first link of each anchor chain connected with the Anchor.
 - d) The last link of each anchor chain connected with the bulkhead.
9. Welding defects can be identified by using
- a) Ultra Sound
 - b) X-ray
 - c) magnet
 - d) All the above
10. Give term used for the bottom shell plating in a double bottom ship:
- a) Bilge
 - b) Marginal bottom
 - c) Outer bottom
 - d) Bottom floor

Section B

Answer All the questions

(5 x 2 = 10 Marks)

- 11. What is Breast hook? Where and why it is used?
- 12. What is Corrugated Bulkhead?
- 13. In the context of ship's longitudinal strength, define 'hogging and sagging in seaway'.
- 14. What is Hatch Coaming? How are they fitted and strengthened?
- 15. Sketch section of Bulwark (through bulwark stay) & label it.

Section C (Answer any 5 out of 7)

- 16.
 - a) With the aid of neat sketches, explain in detail about racking & torsion in ship. **(5marks)**
 - b) Mention three salient features of collision bulkhead in terms of location and structural integrity. **(5marks)**
- 17.
 - a) State the importance of providing load line marks in ships. **(5 marks)**
 - b) Sketch starboard side load line mark for a ship & label it.

(5 marks)

- 18.** Draw typical mid-ship section of a double hull oil tanker & label all the structural elements. **(10 marks)**
- 19.**
- a) Differentiate between longitudinal & transverse framing systems adopted for ship construction. **(5marks)**
 - b) Sketch section through transversely framed double bottom of a ship at bracket floor. **(5marks)**
- 20.**
- a) What is the role of classification society in the design, construction & operation of vessels? **(5marks)**
 - b) List the names of any ten classification societies that perform ship-related surveys. **(5marks)**
- 21.**
- a) Sketch the anchor chain cable arrangement of ship. **(5marks)**
 - b) Briefly explain on cofferdam in E/R. **(5marks)**
- 22.**
- (a) List out the functions of water tight bulkhead. **(5marks)**
 - (b) Mention three salient features of collision bulkhead in terms of location and structural integrity (i) Margin Plate (ii) Manhole (iii) Lighting Hole (iv) Air Holes (v) Drain Hole **(5marks)**

