

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

**Sep/Oct'25 SE**

**Programme Name: DNS**

**Semester: II**

**Subject Code: UD11T6206**

**Subject Name: SHIP CONSTRUCTION AND SHIP STABILITY - II**

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Date: 15.09.2025

Max Marks: 70

Duration: 03 Hrs

Pass Marks: 35

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General Instructions

- (i) All Sections (A, B & C) are to be attempted.
- (ii) Options, if any, are specified in respective section.
- (iii) M. V. Hindship particular booklet shall be issued/allowed

**Section A**

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

1. Anchor chain is connected with anchor shank with ----- (Lug-less shackle, D shackle, Thimble, Bottle Screw)
2. Fuel oil tank vents are fitted with corrosion resistant screens to prevent
  - a. Flames entering through the tank vent
  - b. escape of flammable vapors
  - c. corrosion in the tank vent
  - d. damage to the floating ball
3. In a container ship -----are used to counter stresses produced by twisting moment.
  - a) Torsion Boxes
  - b) I section beams
  - c) Hollow Girders
  - d) Thick Steel plates
4. When the loads are more at the end of the ship, it causes -----

5. When a vessel is heeled, if she tends to continue heeling further she is said to be in

(a) Stable Equilibrium (b) Unstable Equilibrium (c) Neutral Equilibrium (d) None of these.

6. The vertical Distance between centre of gravity and the Metacentre is known as

(a) Transverse Metacentre (b) Metacentric Height (c) Righting Lever (d) None of these.

7. When a ship of  $W = 10000T$ , discharges  $500T$  of ballast and causes final free surface moment of  $1250 \text{ m}^4$ . Calculate the FSC.

8. When  $50T$  of cargo is transferred  $10\text{m}$  forward,  $5\text{m}$  to starboard and  $3\text{m}$  to downwards, the listing moment created is -----( $150 \text{ tm}$ ,  $500\text{tm}$ ,  $250\text{tm}$ ,  $10\text{tm}$ )

9. M.V. Hindship displacement is  $13611.5 \text{ t}$ , what is the hydrostatic draft?

10. What is the deck edge immersion angle for M.V. Hindship when displacement is  $13000T$

### **Section B**

Five Questions of 02 Marks each

11. Describe what is "pounding" and what is done to reduce "pounding stresses"

12. Define Angle of Loll along with suitable diagram.

13. Sketch the midship section of a unstable ship and mark all the parameters.

14. When a ship of  $W 10000\text{t}$ , No3 DB tank is partly full of SW. Tank is  $20\text{m}$  long and  $18\text{m}$  wide and it causes FSC of  $0.996\text{m}$ . When the tank is divided into 4 identical tanks longitudinally, what is the FSC caused in all 4 tanks together?

15. Describe Stresses Caused By Localized Loading with suitable diagram.

### Section C

Five Questions of 10 Marks each.

16. Explain Panting with reference to how are they caused, which part of the ship is affected by them and what control measures are in place to counter them with diagram.

17. Sketch and label air vent to ballast tanks or fuel oil tank. (05 Marks)

18. With the help of a diagram show that  $RM=W \times GM \sin\theta$  (5 marks), Calculate the moment of statical stability when a ship of 16,500T (KG 9.55m, KB 6.25m and KM 12.15m) heels to a angle of 25 deg and remain wall-sided.

19. A ship displacing 40,500t has KM 14.5m, KG 10.7m. She is now listed to 5 deg to port. She has port and starboard deep tanks, each 25m long, 10m wide and 13m deep. The port side tank which was full of SW, is pumped out until ullage is 10m. Assuming no other tanks on the ship are slack, find the final list.

20. M.V Hindship arrives at a port in water of RD 1.012 with drafts F 6.15m, A 7.22m. Her sailing draft in water of RD 1.025 was F 5.33m, A 5.98m. Calculate the weight of cargo discharged at that port, if 120t of fuel and fresh water were consumed in the port.

