

Indian Maritime University
(A Central University, Govt of India)
End Semester Examinations – June 2023

Programme Name: DNS

Semester: II

Subject Code: UD115204

Subject Name: Ship Construction & Ship Stability - II

Date: 24 June 2023

Max Marks: 70

Duration: 03 Hrs

Pass Marks: 35

General instruction

- (i) All Sections (A, B & C) are to be attempted.
- (ii) Options, if any, are specified in respective section.
- (iii) Scientific Calculator is Permitted.
- (iii) Use of Hindship Hydro-static Particulars is permitted.

Section A

(10 x 1 mark = 10 Marks)

Fill in the Blanks / MCQ

1. _____ is the system of Framing used in vessels of relatively lesser length.
2. Centre of flotation is the centroid of the ships _____
3. Vertical Support member used to strengthen bulkheads are called _____
4. While finding Displacement of a ship from a ship's stability booklet _____ is to be used:
5. Cyclic up and down movement of vessel along Vertical Axis is called _____
6. KG of ship increases with ____
 - a. Adding weight above on present KG
 - b. Ballasting DB tank
 - c. Moving weight in Transverse direction
 - d. Moving weight in forward direction.
7. Hull Plating Strakes are generally lettered & numbered as ____
 - a. Lettered from keel upwards and numbered from aft to forward
 - b. Numbered from keel and lettered from aft to forward.
 - c. Lettered from keel and numbered from forward to aft.

- d. Numbered from keel and lettered from forward to aft.
8. Beams are transverse girders which provide support to
- bulkheads
 - deckhouse structures
 - decks
 - vertical frames
9. Intact stability requirements are Initial GM or metacentric height of a cargo vessel should not be
- zero
 - less than 0.15 m
 - less than 0.50 m
 - less than 0.30 m
10. A vessel having $KG=7.85m, KM=7.90m, FSC=0.05m$, vessel is at
- Neutral equilibrium
 - Stable equilibrium
 - Unstable equilibrium
 - No equilibrium

Section B

Short Questions

(5 x 2 marks = 10 Marks)

11. Explain Free surface effect and correction.
12. List the contents of capacity Plan.
13. Explain moment of Statical stability.
14. Define Pounding.
15. What is Stiff vessel?

Section C

16. 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 100 tonnes of fuel and fresh water were consumed in the port. **(10Marks)**

17. Sketch and Label a Transverse view Double Hull Tanker. **(10 marks)**

18. **(2 x 5 = 10 Marks)**

- a. Sketch and Label a Transversely framed double bottom construction
- b. Draw the standard steel sections used in ship building.

19. **(2 x 5 = 10 Marks)**

- a. A ship of 4000 t displacement has KG 5.1 m, KB 2.1 m, KM 5.5 m. Find the moment of Statical stability when she heels 24° , assuming that she is wall sided.
- b. With suitable diagrams explain 'Unstable Equilibrium'.

20. **(2 x 5 = 10 Marks)**

- a. A vessel has a deep tank on the starboard side 10m long 8m wide which is partly full of vegetable oil of R.D 0.78. If displacement is 14000t, KM is 9.2m and KG is 8.3m, find the fluid GM.
- b. A heavy lift derrick whose head is 20m above the keel, is to shift a locomotive weighing 300 tonnes from the UD (KG 8m) to the LH (KG 2m), if the displacement and the initial KG of the vessel were 12000 tonnes and 7.6m, find the KG of the vessel:
 - (i) When the derrick has taken weight off the UD.
 - (ii) After Shifting

xxxx End of Paper xxxx

