

**Duration: 3 hours**

**Max Marks: 100**

**Note:**

1. Use of non-scientific calculator, Norries / Burton's Tables, Hindship Tables and Graph paper is permitted.
2. Attempt all questions from Section 1(20marks each) and any four questions from section 2 (10 marks each), a total of SEVEN questions.
3. If a question is sub-divided into parts, all parts shall carry equal marks

**Section 1**

- Q1 . Sketch and label how a vessel is structurally constructed to take care of various stresses in Forepeak area of the vessel? Label the parts & indicate the stresses they take care of?
- Q2. Displacement 26,000 Ts, LBP 200m, LCF 90m, MCTC 220, TPC 24, Drafts F: 7.80m Aft: 8.40m. She has to load 360 Ts of cargo. Determine the LCG of cargo to load so that in final condition the Aft draft is 8.45 m. Also determine the final Forward draft.
- Q3). M.V. Hindship is floating in S.W. to even keel draft of 8.10m. She has to load 650 Ts of cargo. Space is available in No. 2 T.Dk and No. 5 L.H.
- i) Determine distribution of cargo in each of the space so that in final condition she will be trimmed 0.35m by stern.
  - ii) Determine the final F and A drafts.

**Section 2**

- Q.4. A vessel of Summer displacement 30,000 Ts has a summer load draft of 11.5m, TPC 30.6. If the vessel is floating at a draft of 11.6 m in water of R.D 1.020 T/M<sup>3</sup> in Tropical zone, how much more cargo may she load / discharge to bring her to her Summer load line when floating in S.W.
- Q.5. With sketches explain i)Unstable Equilibrium ii) Neutral Equilibrium
- Q.6. Sketch a) Standard steel sections used in ship Building b)Bilge piping system
- Q.7. Describe various forms of corrosion on board a ship and how they are prevented
- Q.8. Your vessel a bulk carrier has encountered very heavy seas during the ballast voyage. What areas of the ship will you inspect for damages & corrosion

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