

INDIAN MARITIME UNIVERSITY
(A Central University, Government of India)

May/ June 2017 End Semester Examinations
Diploma in Nautical Science- Second Semester
(AY 2015 batch onwards)

Ship Construction & Ship Stability – II (UD11T3204)

Date : 19.06.2017
Time: 2 Hrs

Maximum Marks: 70
Pass Marks : 35

Section -a
Ship Construction

1. Sketch and label profile view of a Ro- Ro Ferry. (10 Marks)

2. a. Write short notes on:
 - i) General Arrangement Plan (5 Marks)
 - ii) Various types of Floors found in DB tanks of ships. (5 Marks)

3. Describe conditions applicable to following stresses while loading and also while ship is moving (Dynamic)
(a) Hogging (b) Sagging (c) Racking" (10 Marks)

4. (a) Draw a neat labelled sketch of a typical forecastle of a ship to show the mooring and anchoring arrangements. (5 Marks)

(b) Write short notes on hawse pipe, spurling pipe, bow stopper, bitter end and chain locker. (5 Marks)

SECTION – B
Ship Stability

5. What do you understand by the term "Righting Lever", Metacenter" and "Metacentric Height" ? Draw a neat diagram to illustrate stable equilibrium. (10 Marks)

6. A weight of 25 tonnes, when moved transversely across the deck through a distance of 10 m, causes a ship to list 5 degrees. Given Δ : 12500 tonnes, KM 7.05 m, Dimensions of slack tank: L: 10 m x B : 6m x D: 2m (RD of Fuel Oil inside tank: 0.95), find KG of the vessel. (10 Marks)
7. A bulk carrier presently of 14250 t, KM 9.8 m, KG 9.0 m, FSC 0.115m has an initial list of 5 degrees to starboard. She then loads 1250 t of ore (KG 8 m, 2m to starboard of centre line) and discharges 250 t of ore (KG 2.0m, 5m from starboard of centre line). 160 t of SW ballast is then transferred from No.3 Top side tank (Starboard) (KG 10m, COG 6m from centre line to No. 3 DB tank (Port) (KG 1m, COG 4 m from Centre line).
Find the final list, assuming that FSM & KM in final condition is 1662 tm and 9.6m respectively. (10 Marks)
8. A ship of LBP 200m, displacement 14000t has a draft Fwd 7.5 m Aft: 8.9m. MCTC 220tm. TPC 20 t. COF 4m aft of amidships. 500 t of cargo is discharged from each of the following 3 holds:
No. 1 hold, COG 60m forward of H.
No. 2 hold, COG 35 m forward of H.
No. 5 hold. COG 70m aft of H.
(where "H" is the point amidships)
200 t Fuel oil is received in No. 2 DB tank, COG 45 m forward of H. Find new drafts F & A. (10 Marks)
9. M.V.Hindship floating in condition No. 7, discharges the entire cargo from No. 2 TD and fills in the Bulbous Bow with 186.6 tonnes of water ballast, Kg 3.52m. Assuming theoretically that the deck cargo of locomotives was shifted to No. 2 TD and also No. 4 (P and S) DB tanks were slackened, increasing the FSC by 0.035 m, calculate the final GM (Fluid) of the ship. (10 Marks)
