INDIAN MARITIME UNIVERSITY

(A Central University, Government of India)
May-June 2018 End Semester Examinations
Diploma in Nautical Science (DNS)
Semester : I
SHIP CONSTRUCTION & SHIP STABILITY – I (UD11T 3103)

Date: 06-06-2018 Maximum Marks : 70

Time: 2 Hrs Pass Marks : 35

Note : Part –A : Question no. 1 is compulsory. Answer any 2 out of remaining 3 questions.
Part – B : Question no. 5 and no. 6 are compulsory. Answer any 2 out of remaining 3 questions.

All Questions carry equal marks.

Graph paper, if required, to be provided by the examination centre.
Use of non-programmable Scientific Calculator is permitted.

Part A – Ship Construction

Q1. Sketch and Label profile view of a ship and show the following parts

(a) Forecastle deck (b) Monkey Island (c) Mast house
(d) Bulbous bow (e) Superstructure (f) Propeller
(g) Gangway (h) Hatch coaming (i) Main mast
(j) Poop deck

(10 marks)

Q2. (a) Sketch and label parts of a sounding pipe. (5 marks)

(b) (i) At how many places on the shipside are the draft marks painted?
(ii) Draw where the waterline will be if the draft reading is 9.45 m.

(2 + 3 marks)

Q3. (a) Show the location of DBTanks, Topside Tank and wing Tanks, sketching Cross section view of a ship.

(b) Draw starboard side loadline of a ship of length 200 mtrs, indicating dimensions of the lines.

(5 x 2 = 10 marks)

Q4. Define and illustrate the following :-

(a)Aft perpendicular (b) Length between Perpendiculars (LBP)
(c) Moulded Depth (d) Length overall

(3 + 3 + 2 + 2 = 10 marks)

Part B – Ship Stability

Q5. Define with suitable sketch, where applicable.(2 marks x 5 = 10 marks)

a) Load displacement
b) Block coefficient
c) Deadweight available
d) Water plane coefficient
e) TPC

Q6. A vessel is floating in dock water of RD 1.005 with her starboard WNA mark 30 mm below, and her port WNA mark 60 mm below the water line. If her summer SW draft is 8.4 m, TPC is 30 and FWA is 160 mm, calculate how much cargo can be loaded to bring the vessel to her summer draft in SW.

(10 marks)

Q7. (a) Construct a displacement curve from the following data:

Draft (m)	3	3.5	4	4.5	5.0	5.5
Displacement (tonnes)	2700	3260	3800	4450	5180	6060

(5 marks)

(b) If this ship's light draft is 3m, and the load draft is 5.2 m, find the deadweight. (5 marks)

Q8. (a) A box-shaped vessel is 120 m long, 14 m wide and 12 m in height. If the displacement is 13776 MT, find the reserve buoyancy % in SW.

(b) Explain why TPC varies with drafts.

(5 x 2 = 10 marks)

Q9. A ship floating in SW at a draft of 8 m is 110 m long and 14 m wide at the waterline. If the block coefficient is 0.72, find the displacement. If the load displacement is 12000 MT, find DWT available.

(10 marks)

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