INDIAN MARITIME UNIVERSITY

(A Central University, Government of India)

May/ June 2017 End Semester Examinations

Diploma in Nautical Science- Second Semester

(AY 2012- 2015 batches only)

Ship Construction & Ship Stability (UD11T2204)

Date : 19.06.2017 Maximum Marks: 70

Time: 2 Hrs Pass Marks : 28

Note: Answer any 3 out of 4 questions from Section -A and any 4 out of 5 questions from Section- B
All questions carry equal marks
Use of Hindship booklet and non-programmable scientific calculator is allowed

Section – A
SHIP CONSTRUCTION

1) Sketch and label a profile view of a container ship showing holds, D.B. arrangements, peak tank arrangements, engine room & cell guide arrangement. (10 marks)

2) a. List out the contents of a ship's General Arrangement plan. (5 marks)
   b. Draw a simple sketch of a Ship side frame and label the parts. Show the connections with corresponding beam and floor (5 marks)

3) Describe and illustrates standard steel sections: (5 x 2 =10 marks)
   a. flat plate
   b. offset bulb plate
   c. equal & unequal angles
   d. channel
   e. Tee

4) a. Define terms shear force and bending moments (5 marks)
   b. Describe racking stress and its causes (5 marks)

Section – B

SHIP STABILITY

5) With neat sketch define the following: (4 x 2.5 marks = 10 marks)
   a. Centre of Gravity
   b. Righting moment
   c. Stable Equilibrium
   d. Free surface correction

6) A ship of 4000 t displacement has KB=2.1m, KM=5.5m and KG=5.1m. Find her moment of Statical stability at 24° heel, assuming that she is wall-sided. (10 marks)

7) A vessel has two deep tanks, port & starboard, each 12 m long, 5 m wide and 8 m deep. The port side tank is full of SW while the starboard side tank is empty. W=9840 t, KM=8.5m, KG=8.0m. Calculate the GM fluid if SW is transferred from port to starboard tank until each tank has equal quantity of water. (10 marks)

8) M.V. Hindship in condition No.5 receives 100 tonnes of DO in No.7 Port DB tank, Cg 5 meters off the center line. Calculate the resultant list. (10 marks)

9) M.V. 'Hindship' floating at a mean draft of 5.5m, KG 7.53m. FSC in final condition is 0.104m. She has to load 1200 tonnes of cargo in No.2 hold and No.2 TD. Find the amount of cargo to be loaded in each space to complete the ship with a GM(F) of 1m. (10 marks)

*****