INDIAN MARITIME UNIVERSITY

(A Central University, Government of India)
May-June 2018 End Semester Examinations
Diploma in Nautical Science (DNS)
Semester : II
Ship Construction and Ship Stability - II
(UD11T 3204)

Date: 07-06-2018 Maximum Marks : 70

Time: 2 Hrs Pass Marks : 35

Note:

- Section – A: Question no. 1 is compulsory. Answer any two out of remaining 3 questions
- Section – B: Question no. 5 and no. 6 are compulsory. Answer any 2 out of remaining 3 questions
- All questions carry equal marks.
- Use of non-Programmable Scientific Calculator & M.V. Hindship Stability Particulars booklet are permitted

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Section A – Ship Construction

1. Write Short Notes /Definitions:
   a) Ballast Tanks
   b) Cofferdams
   c) Peak Tanks
   d) Strum Box
   e) Save-all (2 Marks x 5 = 10 Marks)

2. a) Draw profile view of a container ship showing holds, D. B. Tanks, peak tanks, engine room and cell guide arrangements.
   b) Describe racking stresses and what are it's causes
   (5 Marks x 2 = 10 Marks)

3. a) What are the Stored Data, Input and Output data from stress calculation machines
   b) With a sketch describe sounding pipe arrangement with striker plate.
   (5 Marks x 2 = 10 Marks)

4. a) Sketch the deck edge, showing attachment of sheer strake and stringer plates
   b) Draw a sketch and label bilge piping system of cargo hold of a cargo ship. (5 Marks x 2 = 10 Marks)

Section B – Ship Stability

5. Write Short Notes/Definition:

   a) Centre of Buoyancy (B)
   b) Transverse Metacentre (M)
   c) Free Surface Effect
   d) Righting Lever
   e) Trim (2 Marks x 5 = 10 Marks)

6. M. V. Hindship is in condition No. 2. Find her GM (Fluid) after the following operations are carried out: -

Loads	1 TD	601 tonnes
Loads	3 Hold	1520 tonnes Kg 1.70 m
Loads	5 Hold	420 tonnes

Pumps out F. Pk Tank

Pumps out No. 4 DB Tanks (P & S)

FSC in the final condition is 0.155 m (10 Marks)

7. A cylindrical drum of 0.8 m diameter and 1.5 m height weighs 10 kg. 490 Kg of steel is put in it such that it floats with its axis vertical in FW. Find KB. (Assume ∏ to be 22/7).

(10 Marks)

8. A ship of W 18000 t, KG 7.75 m, discharges 1500 t (6.0 m above the keel and 3 m port of centre line) and loads 500 t (10m above the keel and 4 m port of the centre line). Cargo was then shifted as follows:

   500 t upwards 2 m and to starboard 4 m

   800 t downwards 2 m and to port 3 m

   If the final KM is 8.935 m, find the list (10 Marks)

9. a) Explain with sketch "Stable Equilibrium" and "Unstable Equilibrium" of a ship

   b) 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 24^0 , assuming that she is wall sided

(5 Marks X 2 =10 Marks)