Indian Maritime University
(A Central University, Govt of India)
End Semester Examinations – December 2024
Programme Name: Diploma in Nautical Science (DNS)
Semester: I
Subject Code: UD11T6106
Subject Name: Ship Construction and Ship Stability - I

Date: 19.12.2024 Max Marks: 70
Duration: 03 Hrs Pass Marks: 35

General Instructions

(i) All Sections (A, B & C) are to be attempted.
(ii) Institute should provide graph paper for Q20 B

Section A

Choose the correct answer as applicable. (5 x 1 Marks = 5 Marks)

Q. N	Description	A	B	C	D
1.	Rise of Deck plating at the centre line athwart ships, is termed as:	Sheer	Camber	Tumblehome	Flare
2	Cell guides are provided in the following type of ship:	Tankers	Bulk carriers	Container ships	Roll-on/Roll-off ships
3	The minimum bore of a sounding pipe is generally	18 mm	30mm	32mm	60mm
4	Centre of floatation is geometrical centre of ..... of the ship	Total volume	underwater volume	water plane area	under water area
5	KG of ship increases with	Adding weight above on present KG	Ballasting DB tank	Moving weight in transverse direction	Moving weight in forward direction

Fill-in the Blanks **(5 x 1 Marks = 5 Marks)**

6. _____ curves are used to determine the displacement of a vessel for a given draft.
7. Location of fire hoses and fire hydrants on board can be found on the _____ plan
8. If the Summer Draft of a vessel is 14.4 metres, the distance between the Tropical and Winter marks will be _____ cms.
9. The _____ is a function of the moulded volume of all enclosed spaces of the ship.
10. MOULDED DEPTH is measured at _____ and is the depth from the base line to the _____ of the deck at the ship's side.

Section B

Answer all the questions (5 x 2 Marks = 10 Marks)

11. Define and illustrate Aft perpendicular.
12. Define GT and NT.
13. Sketch and Label longitudinal framed solid floor.
14. Define DWA.
15. Define centre of Buoyancy.

Section C

Answer all the questions

16. Draw a neat sketch of a ship and show the following: **(10 Marks)**

    Funnel, Rudder, Propeller, Engine room, Double bottom tank
    Hatch coaming, Deck cranes, Fore castle deck, Fore peak tank, Bulbous bow

17. **(2x 5marks = 10 Marks)**

    a. Draw a neat sketch of load line marks as drawn on the starboard side of a ship less than 100m in length and label all the dimensions and distances.

    b. Draw profile view of a container ship showing holds, D. B. Tanks, peak tanks, engine room and cell guide arrangements.

18. **(2x 5 = 10 Marks)**

    a. What is a ship plan, and what does the Life-Saving Appliances Plan typically include?

    b. Sketch the deck edge, showing attachment of sheer strake and stringer plates.

19. **(2x 5 = 10 Marks)**

    a. A vessel's breadth is twice her draft and quarter the length. If her displacement is SW is 10000 t, state the length, breadth and draft.

    b. A vessel floats in DW RD 1.016 with her winter load line 100 mm below the water on the port side and 180 mm below the water on the starboard side. If her FWA is 200 mm, TPC is 24 and summer load draft is 9.6 m, find DWT available.

20. **(2x 5 = 10 Marks)**

    a. On a ship of 10000 t displacement, KG 7.75 m, the following changes took place:

    1000 t of cargo discharged from No.2 LH, KG 4.0 m.

    2000 t of cargo discharged from UD, KG 9.8 m.

    500 t of FW taken into peak tanks, KG 6.5 m.

    500 t of fuel oil taken into No.4 DBT, KG 0.5 m.

    500 t of cargo shifted from No.2 TD to No.2 LH, through a vertical distance of 8 m.

Find the final KG of the ship.

b. Construct a displacement curve from the following information:

Draft (m)	2	3	4	5	6
Displacement (t)	1400	3200	5050	7000	9000

From your graph, find:

i. The DWT aboard at 4.2 m draft, if the ships light displacement is 1300t.

ii. TPC at 5 m draft.