Indian Maritime University

(A Central University, Govt of India)

End Semester Examinations – June 2026

Programme Name: B Sc (NS)

Semester: VI

Subject Code: UG21T5602

Subject Name: Naval Architecture Paper – II

Date: 03.06.2026	Max Marks: 70
Duration: 03 Hrs	Pass Marks: 35

General Instructions

(i) All Sections (A, B & C) are to be attempted.
(ii) All the questions are compulsory.
(iii) Graph Sheets are to be provided to the cadets

Section A

Ten MCQs of 01 Mark each – Choose the correct answer as applicable.
10 X 1 = 10 Marks

1. To ensure a safe dry-docking, the ship should typically have:
A) A large trim by the head.
B) A large trim by the stern.
C) A small, manageable trim by the stern (as per the docking plan).
D) Zero stability.

2. Which of the following is an "Input" parameter for a loading instrument?
A) Final Trim.
B) Bending Moment percentage.
C) Specific Gravity (Density) of the cargo.
D) Angle of Vanishing Stability.

3. One advantage of ICCP over sacrificial anode system is:
A. No need of power supply
B. Lower initial cost
C. Adjustable protection current
D. No maintenance required

4. An inclining experiment is carried out to find the:
A. Cargo capacity

B. Ship's displacement
C. Ship's draft only
D. Position of the Light ship KG

5. Which of these is the result of multiplying the Floodable Length by the Factor of Subdivision?
A) Ship's Breadth
B) Permissible Length
C) Criterion of Service
D) Deadweight

6. The purpose of "Cross-Flooding" arrangements is to:
A) Fill the ballast tanks faster.
B) Reduce the angle of heel by equalizing water between port and starboard.
C) Pump water out of the engine room.
D) Clean the cargo holds.

7. Which factor significantly increases the rate of corrosion in seawater?
A) Low salinity.
B) High temperature and high oxygen content.
C) Lack of sunlight.
D) High oil content in the water.

8. The Loading Instrument on board must be approved by:
A. Port state control
B. Ship builder
C. Classification society
D. Crew members

9. The "Harmonized System of Survey and Certification" (HSSC) primarily aims to:
A) Increase the cost of surveys.
B) Align the survey cycles for various statutory certificates to simplify the process.
C) Make all ships look the same.
D) Remove the need for a Master on board.

10. A "Degree 4" Autonomous ship (MASS) is defined as:
A) A ship with one robot on board.
B) A remotely controlled ship with no crew.
C) A fully autonomous ship capable of making decisions and acting by itself.
D) A ship with no GPS.

Section B

Five Questions of 02 Marks each **5 X 2 marks = 10 Marks**

11. Define the critical period?
12. State the effects of a ship having a wider beam and increased Freeboard.
13. List the Key Functions of a Loadicator.
14. Define the factor of subdivision?
15. List any four classification societies.

Section C

Five Questions of 10 Marks each. **05 X 10 = 50 Marks**

All questions are compulsory

16. M.V Indian Pride of LBP 140 m enters a SW drydock drawing 3 m forward and 5.2 m aft. KG 9m, FSM 1200 tm. Calculate the virtual GM and the moment of statical stability at 0.5 deg Heel when she is just about to take blocks fwd.

(10 Marks)

Hydrostatic Table of M.V. Indian Pride:

Draft m	W (Displ.) t in SW	TPC t/cm	MCTC Tm/cm	AF m	KM m
3.6	6849	21.36	154.1	72.141	10.274
3.8	7277	21.48	156.0	72.141	9.950
4.0	7708	21.60	157.8	72.127	9.660
4.2	8141	21.70	159.6	72.099	9.406
4.4	8576	21.80	161.3	72.056	9.182
4.6	9013	21.89	162.7	72.013	8.992

17. A box shaped vessel has length 80 m and breadth 10 m and is floating in the light condition at a draught of 3.0 m in water RD 1.010. It is divided into four holds of equal length. Cargo is loaded as follows: 10 Marks

No. 1 120 tonnes,

No. 2 120 tonnes,

No. 3 empty,

No. 4 160 tonnes.

Construct the curves of shear force and bending moment for every 10 m. Calculate the maximum values of SF, BM and state the positions where they occur.

18. State the objectives of the inclining experiment, the precautions to be observed and describe the procedure of the inclining experiment. (10 Marks)

19.a)Explain any five types of corrosion experienced by ships (5 Marks)

b) Explain why the Ship's Trim shall be small when entering the Drydock. (5 marks)

20. You are sailing on a bulk carrier, how will you prepare the ship for the Enhanced Survey? (10 Marks)

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