

**Indian Maritime University**  
**(A Central University, Govt of India)**  
**End Semester Examinations – June 2025**  
**Programme Name: B Sc (NS)**  
**Semester: 2**  
**Subject Code: UG21T6205**  
**Subject Name: Terrestrial Navigation**

Date: 16.06.2025

Max Marks: 70

Duration: 03 Hrs

Pass Marks: 35

General Instructions

- (i) All Sections (A, B & C) are to be attempted.
- (ii) All Questions Compulsory.
- (iii) Non Programmable Scientific Calculator Permitted / Can be used.
- (iv) Norrie's Tables and Almanac permitted / to be supplied.
- (v) Standard Port Tide Calculation Curve to be supplied.

**Section A**

Ten MCQs/Fill in the Blanks answer all the questions – Choose the most appropriate / correct answer as applicable ( 10 x 1 mark = 10 marks)

1. .... sailing is limited to calculations where the distance between the start and final position does not exceed 600 nautical miles.
  - (a) Polar
  - (b) Plane
  - (c) Mercator
  - (d) Great Circle
2. D'Long from 160<sup>0</sup>E to 170<sup>0</sup> W is:
  - (a) 30<sup>0</sup>W
  - (b) 330<sup>0</sup>E
  - (c) 30<sup>0</sup>E
  - (d) 330<sup>0</sup>W
3. What is the actual shape of the Earth?
  - a. Oblate Spheroid
  - b. Sphere
  - c. Spherate Obloid
  - d. Elliptical

4. What is the value of Gyro Error if True bearing is 205 Deg & observed bearing is 207 Deg in Gyro?

- a. 2 Deg Low
- b. 2 Deg West
- c. 2 Deg East
- d. 2 Deg High

5. What is the value of MP for Lat 24 Deg 02 Min?

- a. 1477.81
- b. 1475.63
- c. 1476.72
- d. 1474.54

6. What is the course of a vessel following Great Circle at its Vertex?

- a. East or West
- b. North East
- c. South West
- d. North or South

7. The charts used in ECDIS is referred to as :

- a. Raster Charts
- b. Paper Charts
- c. Electrical Nautical Charts
- d. Electronic Navigational Charts

8. The angle between ship's course steered and the direction of vessels progress affected by wind is called?

- a. Drift
- b. Set
- c. Leeway
- d. Course Made Good

9. The process of collection of all relevant information required for Passage plan is called?

- a. Appraisal
- b. Planning
- c. Execution
- d. Monitoring

10. All the depths in the chart are referenced to:

- a. Highest Astronomical Tide
- b. Chart Datum
- c. Average Sea Level
- d. Mean Low Water Springs

## **Section B**

Answer all five the question (5 x 2marks = 10 marks)

11. Define Nautical mile?

12. If the Compass bearing of a light house was 121.5 Deg, Variation is 5.5 Deg W and Compass Error is 9.5 Deg W, find the Deviation of compass and True Bearing of light house.

13. A vessel travels 200 miles due East in Latitude  $40^{\circ} 30'N$ . Calculate Difference in Longitude?

14. What do you understand by the term LIMITING LATITUDE in the Composite Great Circle Sailing. List 2 reasons for using such sailings.

15. In the ECDIS settings, what is SAFETY CONTOUR. State its formula.

## **Section C**

Answer all five Question 5 x 10 marks = 50 marks.

16. a) Box the compass from S to W (4 Marks)

b) Your ship is in position – A Lat  $10^{\circ}12.0'S$  Long  $120^{\circ} 11.0'W$  sailed on course  $260^{\circ}(T)$  for 458 Nm. Find the arrival position – B by plane sailing.

(6 Marks)

17. a) List 2 advantages and disadvantages of Mercator Chart. (3 Marks)

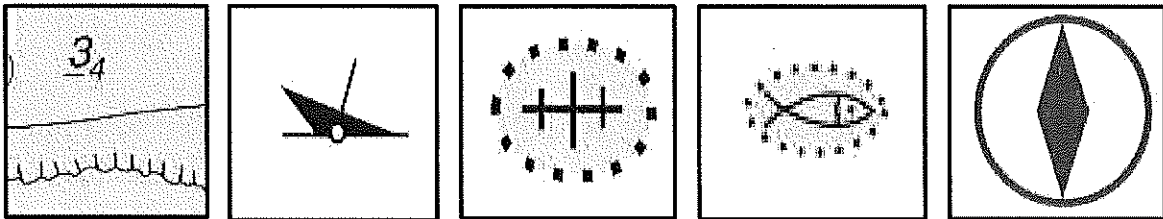
b) Find the Rhumb line Course and Distance, using Meridional parts from starting position – A Lat  $24^{\circ} 00.0'N$ / Long  $074^{\circ} 15.0'W$  to position – B Lat  $46^{\circ} 00.0'N$ /Long  $053^{\circ} 45.0'W$ . (7 Marks)

18. A vessel sails from La Palma Island (28 Deg 46.5 Min N, 018 Deg 02.1 Min W) to New York Approaches (40 Deg 29.5 Min N, 073 Deg 54.4 Min W) on a Great Circle track. Find the Initial course and Distance to be sailed.

(10 Marks)

19.) a) What are LEADING LIGHTS? State its uses in Navigation. (5 Marks)

b) Identify the below 5 chart symbols as per NP 5011 / 5012 : (5 Marks)



20. On 03<sup>rd</sup> Jan 1992, the Tide table for BOSTON, USA has following readings:

0336	0.4
0955	3.1
1621	0.0
2236	2.7

Find Ht of tide at 0815 hrs LT in Boston, using Standard Port Tide Sheet.

(10 Marks)

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