Indian Maritime University

(A Central Uni1versity, Govt of India)

End Semester Examinations – June 2025

Programme Name: DNS

Semester: I

Subject Code: UD11T6104

Subject Name: Terrestrial Navigation

Date: 13.06.2025	Max Marks: 70
Duration: 03 Hrs	Pass Marks: 35

General Instructions

(i) All Sections (A, B & C) are to be attempted.
(ii) Use of Norrie's table, Nautical Almanac and Scientific Calculator permitted, Tide graph to be issued.

Section A

Answer all the questions, each question carry 1 mark (10 marks)
MCQs/Fill in the Blanks/ true or False as applicable.

1. Shape of the earth is an _____
2. A parallel of latitude is a .....circle (Great/Small)
3. D'Long is measured as the arc of the _____
4. In Parallel sailing formula departure = Distance (True/False)
5. In Plane sailing formula, Departure/D'Long is equal to
   (a) Cos co (b) Cos m Lat (c) Tan Co (d) Sin m Lat
6. The angle between the magnetic and the geographic meridian is known as .....
7. Depth on the chart are the depths below Chart Datum (True/False)
8. Leeway is allowed to correct the set due to current (True/False)
9. A small scale chart covers a large geographical area, whereas a large scale chart covers small geographical areas, such as harbours and anchorages. Medium scale charts are used in coastal navigation.
   (a) True
   (b) False

10. Acronym of ECDIS is:
    (a) Electronic Chart Display Innovation System
    (b) Electronic Chart Digital Immigration System
    (c) Electronic Chart Display Information System
    (d) Electronic Chart Display Informal System

Section B, Short Answer Question

Answer all Five Questions, each question carry 2 marks.

11. Define: (a) Great Circle (b) Small Circle.

12. State: (a) Parallel sailing formula (b) Mercator sailing formula

13. The Compass bearing of a Light house was observed to be 144.5^0(C). Find its true bearing if Variation was 4.5^{0}W and deviation 2.0^{0}E

14. List two important features of Mercator chart that makes it suitable for navigation purpose

15. Calculate the East-West distance for a D'Long of 006^0 11.8' on Lat 36^0 12.0'N and what is this distance called?

Section C, (Long Answer Questions)

Answer All Five Questions, each question carry10 Marks.

16. (a) State the components, segments and aspects of passage planning (5 Marks)
    (b) Distinguish between DR, EP and Fix (5 Marks)

17. (a) State two advantages of ECDIS over paper charts. (5 Marks)
    (b) State two differences between Raster charts and Vector charts. (5 Marks)

18. Find the Rhumb line course and distance using Mercator sailing, from A in position Lat. 49^0 50'N. Long. 05^0 30'W to B in Lat. 37^0 50'N. Long 25^0 40'W

19. Find the Great circle distance and initial course between A – 24^0 35'N 063^0 44'E and B – 40^0 21' N 139^0 21'E.

20. Find the height of tide and depth of water at 1430 hrs ST on March 2nd , at a position at place off Singapore, where charted depth is 4 m. Extract from the tide tables for the day is given below.
    (10 Marks)

Time	Height
0014	2.7 m
0603	0.8 m
1209	2.9 m
1830	0.6 m