

**Indian Maritime University**  
**(A Central University, Govt of India)**

**Sep/Oct'25 SE**

**Programme Name: DNS**

**Semester: 1**

**Subject Code: UD11T6104**

**Subject Name: Terrestrial Navigation**

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Date: 04.09.2025

Max Marks: 70

Duration: 03 Hrs

Pass Marks: 35

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General Instructions

- (i) All Sections (A, B & C) are to be attempted.
- (ii) Options, if any, are specified in respective section.
- (iii) Nories Tables/Nautical Almanac/Meridional parts table can be used.
- (iv) Tidal standard curve charts will be provided.

Section A

Ten MCQs/Fill in the Blanks of 01 Mark each – Choose the correct answer as applicable.

1. The angle between True North & the Magnetic North is called

- A) compass course
- B) Magnetic course
- C) variation
- D) True course

2. D'long between A:  $10^{\circ}$  S  $150^{\circ}$  W to B  $15^{\circ}$  N  $170^{\circ}$  W is

- A)  $70^{\circ}$  E
- B)  $20^{\circ}$  W
- C)  $70^{\circ}$  W
- D)  $10^{\circ}$  E

3. Distance along a parallel of latitude is also referred to as

- A) DMP
- B) Departure
- C) d'long
- D) d'lat

4. Mean latitude between A:  $18^{\circ}$  N  $050^{\circ}$  W to B  $28^{\circ}$  N  $020^{\circ}$  W is

- A)  $5^{\circ}$  S
- B)  $10^{\circ}$  S
- C)  $23^{\circ}$  N
- D)  $06^{\circ}$  S

5. The Quadrantal form of the course  $190^{\circ}$  is

- A) S  $10^{\circ}$  E
- B) S  $10^{\circ}$  W
- C) N  $30^{\circ}$  W
- D) N  $30^{\circ}$  E

6. It is a circle on the surface of a sphere, the plane of which does not pass through the centre of the sphere.

- A) Meridian
- B) Small Circle
- C) Great Circle
- D) Equator

7. The cause of deviation is due to

- A) isogonal line
- B) Ship's magnetism
- C) Magnetic lines due to magnetic needle
- D) earth's magnetism

8. It is the ratio that the distance between two points on the chart bears to the actual distance between them on the earth

- A) D'long
- B) DMP
- C) Natural Scale
- D) D'lat

9 The first stage of passage planning is

- A Planning
- B Appraisal
- C Execution
- D Monitoring

10 A flashing light is a rhythmic light in which,

- A The total duration of light is shorter than the total duration of the darkness
- B The total duration of light is longer than the total duration of the darkness
- C The total duration of light is equal to the total duration of the darkness
- D None of Above

### **Section B**

Five Questions of 02 Marks each

- 11. Describe Geographical Range of light.
- 12. Define Set and drift
- 13. Explain Great Circle
- 14. Define latitudes and parallels of latitudes
- 15. What is Difference of meridional parts(DMP)

### **Section C**

Seven Questions of 10 Marks each of which **any 05 questions** to be answered.

16. Find the height of tide and depth of water at 1430 hrs ST on March 2<sup>nd</sup>, 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
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0014	2.7 m
0603	0.8 m
1209	2.9 m
1830	0.6 m

17. Find the initial course and distance from  $69^{\circ} 30.0'N$   $060^{\circ} 50.0'E$  to  $44^{\circ} 40.0'N$   $120^{\circ} 20.0'E$  (10 marks)

18 A) What do you Understand by chart Quality and Accuracy (CATZOC on an ENC) (5marks)

18 B) What is the difference between ENC and Paper Charts? (5marks)

19. Find the true course if the compass course is  $116^{\circ}(C)$  & variation is  $3^{\circ} W$ . Find the true bearing of the light house if the compass bearing was  $357^{\circ}(C)$  when the ship's head showing  $116^{\circ}(C)$ .

Use the following deviation table.

Ship's head (C)	$100^{\circ}(C)$	$110^{\circ}(C)$	$120^{\circ}(C)$	$130^{\circ}(C)$
Deviation	$9^{\circ} W$	$4^{\circ} W$	$2^{\circ} E$	$7^{\circ} E$

20. A) Explain DR, EP and Fix with reference to Chart work. (5 marks)

20. B) Find by Mercator Sailing the course and distance between following position

Lat A:  $24^{\circ} 00'N$  Long A:  $74^{\circ} 15' W$  & Lat B:  $46^{\circ} 00'N$  Long B:  $053^{\circ} 45'W$   
(5 marks )