

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

**Sep/Oct'25 SE**

**Programme Name: B Sc (NS)**

**Semester: 1**

**Subject Code: UG21T5106**

**Subject Name: TERRESTRIAL NAVIGATION**

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Date: 09.10.2025

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) Scientific calculator, Norrie's table is permitted.
- (iii) World Map will be supplied by the examination centre.

**Section A**

Objective Type Questions (1x10=10 Marks)

1. The strait between France and England is called

- A) Malacca strait
- B) Dover Strait
- C) Salet Sunda Strait
- D) Palk Strait

2. The course line that cuts all the meridians at the same angle appears as a \_\_\_\_\_ line on the Mercator chart, but when seen on the surface of the earth it appears in the shape of a \_\_\_\_\_.

- A) Spiral, Straight
- B) Straight, Straight
- C) Straight, Spiral
- D) None of these.

3. D'lat from  $5^{\circ}\text{S}$  to  $2^{\circ}\text{N}$  in minutes is

- A)  $7^{\circ}\text{N}$
- B)  $4^{\circ}\text{N}$
- C)  $3^{\circ}\text{S}$
- D)  $7^{\circ}\text{S}$

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

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

5. \_\_\_\_\_ sailing is limited to calculations where the distance between the start and final position does not exceed 600 nautical mile.

- A) Polar
- B) Plane
- C) Mercator
- D) Great circle.

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

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

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

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

8 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

9. Geographical mile is the length of the arc of the \_\_\_\_\_ subtending an angle of 1' at the centre of the earth.

- A) Meridian
- B) Parallel of latitude
- C) Equator
- D) None of these

10. The deviation of a compass varies as the ship's head changes.

- A) True
- B) False.

### Section B

Short answer type questions (2X5=10Marks)

11. Define Equator?
12. What is natural scale of a chart?
13. List any two advantage of Mercator chart?
14. What is a Great circle and Small circle?
15. What is Vertex of a great circle track?

### Section C

Answer all five questions. (10 Marks Each)

16.

A) Given the compass error is 6°W, deviation is 2°E. Find the variation.

(5 marks)

B) By Mercator sailing find the true course and the distance between the position 49° 10' N 12° 30' W and 25° 15' N 26° 50' W.

(5 marks)

17.

A) What is geographic and geocentric latitude of a place? (5 marks)

B) Find the course and distance from position A:  $49^{\circ}35'N$   $004^{\circ}00'W$  to position B:  $50^{\circ}10'N$   $002^{\circ}55'W$ . (5 marks)

18.

On 04 March 2008 at 1200h a ship in DR  $17^{\circ}10'S$   $018^{\circ}09'E$  set course and carried out various alteration of course as under:-

	Date	Time	Co(G)	Gyro error	Log
	4 March	1200	$248^{\circ}$	$1^{\circ}$ high	0
A/C	4 March	2100	$052^{\circ}$	$2^{\circ}$ high	88
A/C	5 March	0500	$323^{\circ}$	$1^{\circ}$ high	180
		1200			250

Find the position at noon on 05 March 2008. The current was  $133^{\circ}$  (T) at 3 knots throughout. A/C means 'Alter course'. Co (G) means Gyro Compass course.

(10 marks)

19. Find the Initial course and GC 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)

20.

A) You are on a voyage from Chennai to London via the shortest route. Mark and mention the names of the Ocean(2nos), Sea(3nos), Canal(01 no), Strait(01 no), Durban, London and Chennai on the world map.

(5 marks)

B) A Ship in the position  $40^{\circ}N$   $105^{\circ}12'E$  steams through a distance of 1000 miles on a course of  $090^{\circ}$  (T). Find the final position. (5 marks)