

**Indiann Maritime University**  
**(A Central University, Govt of India)**  
**End Semester Examinations – June 2025**

**Programme Name: DNS**

**Semester: I**

**Subject Code: UD11T5104**

**Subject Name: Navigation I - NAVIGATION & CHARWORK**

Date: 05.06.2025	Max Marks: 70
Duration: 03 Hours	Pass Marks: 35

General Instructions

- (i) All Sections (A, B & C) are to be attempted.
- (ii) Scientific Calculator is permitted.
- (iii) Use of Norrie's Table, Nautical Almanac permitted.

**Section A**

Choose the correct answer.....(1 mark each)

1. A parallel of latitude is a ..... circle (Great / Small)
2. Suez Canal connects Red sea with... (Black sea/ Mediterranean/ Gulf of Aden)
3. In Parallel sailing formula departure= Distance. (T/F)
4. Mercator charts are normally made for latitudes higher than 70° (T/F)
5. Leeway is allowed to correct the set due to current (T/F)
6. Obliquity of the ecliptic is (an angle/ circle/ straight line)
7. The plane of sensible horizon passes through (observer's eye/ Center of the earth/ observer's zenith)
8. To correct compass course, Easterly error is to be (added/ subtracted)
9. Beam bearing = Ships' heading +/- 90°(T/F)
10. Course is measured from North in ..... (clockwise/ anticlockwise) sense.

**Section B**

SHORT ANSWER TYPE QUESTIONS .....(2 marks each)

11. With a simple sketch show Difference of latitude and difference of longitude.
12. Calculate the distance between 18°24'N 042°12' E and 18°24'N 055° 42' E



13. List two disadvantages of a Mercator chart
14. Compass course  $359^\circ$ , Variation  $4.5^\circ$  W, deviation  $2^\circ$  E. Find true course.
15. List the corrections with signs, to be applied to Sun's sextant altitude to obtain true altitude.

### Section C

Answer all the questions. (10 Marks Each)

16. A ship leaves position  $28^\circ 54'N$   $006^\circ 30'W$ . Then she steams as follows:

Course	Distance
$270^\circ$ (T)	300NM
$180^\circ$ (T)	300 NM
$090^\circ$ (T)	300 NM
$000^\circ$ (T)	300 NM

Find the arrived position

17. a. Compare Mercator Sailing with Plane sailing.  
 b. A ship sails from  $11^\circ 36'S$   $176^\circ 54'W$  to  $06^\circ 18'N$   $138^\circ 18'W$ . Find the course and distance.

18. a. On the 28<sup>th</sup> of May 2008, the sextant altitude of Sun's lower limb was  $38^\circ 11.6'$ . Index error was  $2.8'$  off the arc and HE was 12.3 m. Find the true zenith distance (TZD).

b. Write a short note on Mercator and Gnomonic projections

19. A vessel steams as follows from noon position  $38^\circ 12.6' N$   $014^\circ 11.8' E$ :

If the variation was  $4^\circ$  W and a current was setting  $292^\circ$  T at 2.5 kt. throughout, find the arrived position. (10 marks)

Time	Course (C)	Deviation	Distance
1200	$116^\circ$ (C)	$3^\circ$ W	88
1730	$142^\circ$ (C)	$1^\circ$ E	108
2330	$072^\circ$ (C)	$2^\circ$ W	104
0600	$038^\circ$ (C)	$4^\circ$ E	93
1200	$044^\circ$ (C)	$3^\circ$ E	

20 Write short notes on

(2.5 x 4 = 10 Marks)

- a) Estimated position
- b) Temporary correction
- c) Deviation
- d) Dead Reckoning

*[Handwritten signature]*