

INDIAN MARITIME UNIVERSITY
(A Central University, Government of India)

May/June 2016 End Semester Examinations
B.Sc. (Nautical Science) - Fifth Semester (2013 batch onwards)

NAVIGATION - V (T 2501)
(Terrestrial Navigation and Voyage Planning)

Date : 04.07.2016

Time: 3 Hrs

Maximum Marks: 70

Pass Marks : 35

Note: Use BA English Channel Chart.

Use of Norie's table and Non- Programmable Scientific Calculator Permitted

Use attached Deviation Card I.

Answer any SEVEN Questions (7 x 10= 70 Marks)

1. Explain Gnomonic and Mercator Projection and list its advantages and disadvantages. (10)

2. Find the **initial course and the final course** along the Great Circle track between the
Position

From	To
Latitude $49^{\circ}50'N$	$32^{\circ}29'N$
Longitude $005^{\circ}15'E$	$064^{\circ}00'W$

(10)

3. a) Find the length of 1° Longitude if 1° of Latitude on a Mercator Chart measures
12 cms in Latitude $40^{\circ}S$. (3)

b) On 4 May a Ship in position $00^{\circ}10'N$ $68^{\circ}09'E$ set course as follows:-

	Time	Co	Dev	Var	Leeway	Wind	Log
	1200	126°	$2^{\circ}E$	$4^{\circ}E$	3°	SW	0
A/C	1800	149°	$3^{\circ}E$	$4^{\circ}E$	2°	NE	89
A/C	2300	210°	$1^{\circ}W$	$5^{\circ}E$	3°	SE	168
	2400						180

A current set the vessel 183 T at 1.5 knots throughout. Find the EP at 2400 Hours (7)

4. Find the initial course, final course and distance along **the Composite circle track**.

	From	To
Latitude	$37^{\circ}48'N$	$35^{\circ}40'N$
Longitude	$122^{\circ}40'W$	$141^{\circ}00'E$

If the maximum Latitude is $45^{\circ}N$ (10)

5. List the information you will obtain from the following publications:

- a) Admiralty Sailing Direction (3)
- b) The Mariner's Hand book (3)
- c) Catalogue of Charts and Admiralty Publications (4)

6. On a voyage from London to Avonmouth

- a) A vessel steering 250^0 (c) at 1900hrs, St. Catherine point Lt. bore 302^0 (c) and Nab Tower bore 002^0 (C) Find the ship's position at 1900 hrs. (5)
 - b) From this position, set a course by compass to pass Bill of Portland Lt. 10 miles off when a beam on the starboard side – Find the course of Steer. (1)
 - c) While on this course at 2100 hrs Anvil point Lt. Ho bore 4 points on the starboard bow and at 2145 hrs. Anvil point Lt. was a beam on the starboard side Find the ship's position at the time of beam bearing at 2145hrs. (4)
- (Variation 14^0 W, Ship's speed 12 knots, Deviation card I.)

7. At 1400hrs the following compass bearings were observed:

- | | |
|---------------------------|-------------|
| Casquet's lighthouse | 061^0 (C) |
| Les Hanois lighthouse | 112^0 (C) |
| Roches Douvres lighthouse | 173^0 (C) |

Find the ship's position and the deviation of the compass for the ship's head (variation was 2^0 E) (10)

- 8. a) A ship in latitude 50^0 S steers a course of 250^0 (T) making a D'Long of $20'$ / hour. Calculate the Ship's speed. (5)
- b) Find Course and Distance from $20^010'N$ $179^040'W$ to $13^040'N$ $178^010'E$. (5)
- 9. a) In sailing a certain course and distance, the d'lat is 1.5 times the departure and 0.8 times the d'long. Find the Middle Latitude and Course Made Good. (5)
- b) Vessel's starting position was $20^011'N$ $072^052'W$ had set a course of 032^0 T covered a distance of 238 miles during the passage. Find the position arrived. (5)
