

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

**May/June 2015 End Semester Examinations**  
**B.Sc. (Nautical Science) - Second Semester (2013 batch onwards)**

**Navigation Paper – II (T 2207)**

**Date : 18.06.2015**

**Time: 3 Hrs**

**Maximum Marks: 70**

**Pass Marks : 35**

**Notes:-**

1. Use of non-programmable scientific calculator, Nautical Almanac and Noorie's Nautical Table are allowed.
2. Candidates must show the complete working (including rough work) and not answers alone.
3. Use diagram/sketches/figures for explanations where appropriate.
4. BA Chart 5049 or equivalent chart to be provided by exam centre..
5. Total SEVEN questions from both sections to be done out of NINE questions.

**SECTION- A**

**(TERRESTRIAL NAVIGATION)**

**(30 Marks)**

(QUESTION NO 1 IS COMPUSORY. ATTEMPT ANY TWO FROM THE REMAINING)

1. a) Define:- i) Position Line    ii i) Estimated position (5 Marks)

- b) On 14<sup>th</sup> Nov 1992 at noon, a ship's in DR position 17° 08' N 136° 32'E, set courses as follows:-

	Time	True Co.	Leeway	Wind	Log
	1200	274°	3°	SW	0
A/Co	2300	256°	3°	NW	138
A/Co	0700	286°	1°	NNW	246
A/Co	1200	244°	3°	W	309

Ship experienced a current setting in the direction 140° at 1.0 knots  
Find the estimated position next noon.

(5 Marks)

2. a) The Horizontal sextant angle between two light houses is observed to be 180°, what conclusion can be drawn from the observation? (5 Marks)

- b) If the height of a light given on the chart is 22 mtrs and the height of the observer is 17 mtrs.  
Find the distance at which the light will be raised? (5 Marks)

3. a) How will you obtain Index Error on a marine sextant.  
b) What are the uses of Azimuth mirror? ( 10 Marks)

- 4 a) What are T/P notices? (5 Marks)
- b) Define 'geographical range' and 'nominal range'. (5 Marks)

**SECTION B (VOYAGE PLANNING) (40 Marks)**

(QUESTION NO 5 IS COMPUSORY. ATTEMPT ANY THREE FROM THE REMAINING)

5. a) Find the Luminous range of a light in state of visibility of 5 NM if the Nominal Range is 24 NM. (4 marks)

b) Vertical Sextant angle subtended by a light house is  $00^{\circ} 18'$ , if the height of light house is 53.5 mtrs and the index error of the sextant is  $2.0'$  on the arc, find the distance of the observer from the light house. (6 Marks)

6. At 0800 hrs. , a vessel at anchor observed following compass bearings:-

- i. Casquet's Lt.Ho.  $061^{\circ}C$
- ii. Les Hanois Lt. Ho.  $112^{\circ}C$
- iii. Roches Douvers Lt. Ho.  $173^{\circ}C$

Find the position of the ship and also deviation for the ship's head, if the Variation was  $4^{\circ}E$ . (10 Marks)

7. At 1400, from a ship, following compass bearings were observed:-

Needles Point Lt. Ho. ----- $319^{\circ}C$   
 St. Catherine Point Lt. Ho.----- $359^{\circ}C$   
 Nab Tower ----- $050^{\circ}C$

Find the following:-

- a) Position of the ship
- b) Deviation on the ships head if Variation is  $6^{\circ}W$ . ( 10 Marks)

8. a) At 0400 hrs, steering a course of  $278^{\circ}T$  at 16 knots, Nab Tower Lt. dipped bearing  $321^{\circ}T$  and at 0648 hrs Bill of Portland Lt. was raised bearing  $295^{\circ}T$ . Find the position of the ship at 0400 hrs and 0648 hrs.

b) Find the set and drift experienced between 0400 hrs and 0648 hrs and the course and speed made good. (Height of eye 11 mtrs) (10 Marks)

9. a) How does navigating officer update Electronic charts using digital notices?

b) What precautions should be observed while using 'Tracings' to update charts? (10 Marks)

\*\*\*