

**INDIAN MARITIME UNIVERSITY**  
**(A CENTRAL UNIVERSITY, GOVERNMENT OF INDIA)**  
**B.Sc. (NS) SEMESTER VI**  
**JUNE 2016 END SEMESTER EXAMINATION**  
**NAVIGATION PAPER VI (UG21T2601)**

**Time: 3 Hrs**

**Date: 09 -06-2016**

**Max. Marks: 70**

**Pass Marks: 35**

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**Section – A (Celestial Navigation) Marks:40**

**Note: Norie's Nautical Table and Non-programmable Scientific calculator is permitted.**

**Nautical Almanac of 1992 to be used.**

Question No. 1 is Compulsory . Answer any **Three** of the remaining . All question carry equal **10 marks**.

1. In North latitude, the lower meridian altitude of a star of declination  $30^{\circ} 50' \text{N}$  and  $10^{\circ} 40'$  by sextant. If IE was  $3.1'$  off the arc, and HE was 10m, find the latitude and compute the sextant altitude of the upper meridian passage.

2. Write short notes on the following:

10 Marks

(i) Twilights

(ii) 'v' and 'd' corrections in a nautical almanac

3. (a) Explain with a neat diagram Solar eclipse, types and conditions for a solar eclipse to Occur. (5)

(b) Describe the different phases of Moon with a suitable diagram 5 Marks

4. Explain with a neat diagram Solstices and equinoxes and significance of the eccentricity of the earth's orbit. (10)

5. To a stationary observer, an unknown star bore  $000^{\circ}(\text{T})$  with true altitude  $78^{\circ}12'$ . After about 12 hrs, the same star bore  $180^{\circ}(\text{T})$  with true altitude  $18^{\circ}54'$ . Calculate the observer's latitude and the declination of the star. (10)

**Section - B Voyage Planning Marks: 30**

**Note: Question No. 6 is Compulsory. Answer any Two of the remaining Three.**

6. Discuss the various segments of passage planning from departure berth to arrival berth.

7. Describe with a suitable sketch how a vessel would approach and cross a traffic separation scheme with reference to "ship routing".

8. Make a check list of items for passage appraisal for planning a passage from JNPT (Nhava Sheva) to Port Qasim (Karachi).

9. What are the advantages and disadvantages of 'Weather Routeing' services? Describe.

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