ELEMENTS OF SPACE SCIENCE

Max. Marks: 50   Duration: 90 mins.
Course: Major Elective

Section A
Answer all the questions ($3 \times 2 = 6$)

1. State Cosine formula and Cotangent formula.

2. Describe the influence of temperature and pressure of atmosphere on refraction.

3. Define parallactic angle of a celestial body.

Section B
Answer any three questions ($3 \times 8 = 24$)

4. In a spherical triangle ABC, show that $\dfrac{\sin(A+B)}{\sin C} = \dfrac{\cos a + \cos b}{1 + \cos c}$.

5. Derive the relation for Heliocentric parallax.

6. Derive the condition for the occurrence of a lunar eclipse.

7. Define sidereal time and express in sidereal time units an interval of 25h 24m 5s of mean solar time.

Section C
Answer any one question ($1 \times 20 = 20$)

8. a) Describe equatorial coordinate system and meridian coordinate system by representing them on the same figure.

   b) Derive the eccentricity of the earth's orbit around the sun.

   c) Describe the different kinds of aberration.   ($10 + 7 + 3$)

9. a) Discuss the direct and retrograde motion of superior planets.

   b) Describe the importance of total solar eclipse.

   c) Find the sidereal time at Greenwich corresponding to the mean time 8h 12m 45s

   on a given date, where the mean time of sidereal noon was 6h 47m 40s.

                                                                   ($10 + 5 + 5$)

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