



**LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034**

**B.Sc. DEGREE EXAMINATION – MATHEMATICS**

**THIRD SEMESTER – APRIL 2013**

**MT 3502/MT 5503 - ASTRONOMY**

Date: 02/05/2013  
Time: 9:00 - 12:00

Dept. No.

Max. : 100 Marks

**PART – A**

**ANSWER ALL QUESTIONS:**

**(10 x 2 = 20)**

1. State cosine formula in a spherical triangle.
2. What is twilight?
3. State the laws of refraction.
4. Define parallax of a body.
5. Define dynamical mean sun.
6. Define perihelion and aphelion.
7. What are the three types of libration?
8. Define waxing and waning of moon.
9. What is a shooting star?
10. Give the diameter of Uranus and Saturn.

**PART – B**

**ANSWER ANY FIVE QUESTIONS:**

**EACH QUESTION CARRIES EIGHT MARKS:**

**(5 x 8 = 40)**

11. Write notes on the equatorial system of celestial coordinates.
12. Trace the variations in the duration of day and night during a year for a place of latitude 50N.
13. Derive the tangent formula for refraction.
14. Describe the sextant.
15. Write a note on the different types of calendar.
16. Write a note on the surface structure of moon.
17. Find the maximum number of eclipses possible near a node.
18. Describe any two constellations visible over Chennai.

**PART – C**

**ANSWER ANY TWO QUESTIONS.**

**(2 x 20 = 40)**

19. a. Describe the phenomenon of twilight. Obtain the condition that twilight may last throughout night.  
b. Define sidereal time, right ascension and hour angle. Obtain the relation among them.
20. a. Derive Cassini's formula for refraction.  
b. Describe the sundial with appropriate diagrams.
21. a. Define sidereal and synodic period of moon and derive a relation between them.  
b. Describe the conditions for the occurrence of total solar eclipse.
22. a. Derive a formula for equation of time and show that it vanishes four times in a year.  
b. What is elongation of a planet? Describe the heliocentric motion of an inferior planet.

\$\$\$\$\$\$