# LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

THIRD SEMESTER – **APRIL 2015**

## MT 3502/MT 5503 - ASTRONOMY

Date : 29/04/2015        Dept. No.                    Max. : 100 Marks
Time : 09:00-12:00

## PART – A

**Answer ALL questions:**                                      **(10 x 2 = 20 marks)**

1. Define visible and invisible hemispheres.
2. Define first point of Aries and first point of Libra.
3. Define parallax of a body.
4. What is chronometer?
5. State kepler's laws of planetary motion.
6. Express in sidereal time an interral of $16^h\ 18^m\ 24^s$ of mean time.
7. What do you mean by conjunction?
8. What is epact of the year 2015?
9. Define asteroids.
10. Define a shooting star.

## PART – B

**Answer any FIVE questions:**                                 **(5 x 8 = 40 marks)**

11. Describe equatorial system of celestial coordinates.
12. Define circumpolar star and find the condition for any star to be circumpolar.
13. Find the effect of refraction of R.H. and declination of a star.
14. Obtain the length of the four seasons.
15. Define equation of time and prove that it vanishes four times a year.
16. Define sidereal and synodic month of the moon and find the relation between them.
17. Draw the shadow cone and find the condition for the occurrence of a lunar eclipse.
18. Write a note on comet.

## PART – C

**Answer any TWO questions:**                                  **(2 x 20 = 40 marks)**

19. a) What is twilight?   Find the condition for twilight to last the whole night.      (10)
    b) Trace the changes in the length of the day and night for Chennai (Lat $13^o.4$ N).      (10)

20. a) Derive cassini's formula for refraction.      (10)
    b) Explain the Astronomical instrument "Equatorial" and its uses.      (10)

21. a) Trace the changes in the phase and elongation of the moon in one lunation.      (10)
    b) Find the maximum number of eclipses possible in a year.      (10)

22. a) Explain the surface structure of the Sun.      (10)
    b) Write a note on any four constellations.      (10)

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