LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

FIFTH SEMESTER – **NOVEMBER 2018**

16UMT5ES02 – ASTRONOMY

Date: 03-11-2018   Dept. No.   Max. : 100 Marks
Time: 09:00-12:00

PART – A

Answer **ALL** Questions   (10 x 2 = 20 marks)

1. What is a sidereal day?
2. Define Zenith and Nadir.
3. State the laws of refraction.
4. Define the terms aphelion and perihelion.
5. Define sidereal year.
6. Write a short note on anomalistic year.
7. Define an umbra.
8. Write a note on Asteroids.
9. What are inner planners?
10. Name any two zodiac constellations.

PART – B

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

11. Prove that the latitude of a place is equal to the altitude of the celestial pole.
12. Define Dip of the horizon and derive an expression for Dip.
13. Derive the tangent formula for refraction.
14. Define and derive the expression for geocentric parallax.
15. Write a note on Julian calendar.
16. Give a brief description of the surface structure of moon.
17. Write notes on comets.
18. Define sidereal month and synodic month for the moon and find the relation between them.

PART – C

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

19. a) Explain the four coordinate systems to fix the position of the celestial body.

20. a) Derive Newton's deductions from Kepler's laws.   (12)

    b) Calculate the eccentricity of earth's orbit around the sun.   (8)

21. Derive the expression for the phases of Moon and also explain in detail the different phases of moon.

22. Draw and explain Solar and Lunar eclipse in detail.

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