



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – MATHEMATICS

THIRD SEMESTER – NOVEMBER 2013

MT 3502/MT 5503 – ASTRONOMY

Date : 08/11/2013
Time : 9:00 - 12:00

Dept. No.

Max. : 100 Marks

PART - A

ANSWER ALL QUESTIONS:

(10 x 2 = 20)

- 1) What is a sidereal day?
- 2) What is the condition for a star to be circumpolar?
- 3) State the laws of refraction.
- 4) Define geocentric parallax of a body.
- 5) Define the terms *aphelion* and *perihelion*.
- 6) Write a short note on anomalistic year.
- 7) Give the relation between sidereal and synodic months?
- 8) Draw the diagram for a lunar eclipse.
- 9) What is solar constant?
- 10) Name the Galilean satellites.

PART - B

ANSWER ANY FIVE QUESTIONS:

(5 x 8 = 40)

- 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) Find the effect of heliocentric parallax on the longitude of a star.
- 15) Calculate the eccentricity of the earth's orbit around the sun.
- 16) Determine the condition for the occurrence of a lunar eclipse.
- 17) Find the condition for the occurrence of a total solar eclipse.
- 18) Explain briefly about Comets.

PART - C

ANSWER ANY TWO QUESTIONS:

(2 x 20 = 40)

- 19) (i) Find the hour angle of a body at rising or setting.
(ii) Find the condition that the twilight may last throughout night. (10+10)
- 20) What is sun dial? Explain about horizontal sun dial and equatorial sun dial.
- 21) (i) Write a note on Gregorian calendar. Using this, determine whether 1500 A.D. is a leap year or not.
(ii) Describe the first three planets of the solar system. (10+10)
- 22) Find the maximum and minimum number of eclipses possible near a node of the lunar orbit.

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