

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2018
(Sixth Semester)

Branch – MATHEMATICS

ASTRONOMY

Time : Three Hours

Maximum : 75 Marks

SECTION-A (20 Marks)

Answer ALL questions

ALL questions carry EQUAL marks (10 x 2 = 20)

- 1 Define celestial horizon.
- 2 Define dip of horizon.
- 3 Find the effect of refraction on the shape of the disc of the sun.
- 4 Write down the analytical condition for perpetual night.
- 5 Define aberration.
- 6 Find the relation between horizontal parallax and angular radius of a body.
- 7 State Kepler's law of planetary motion.
- 8 Define mean anomaly.
- 9 Define sidereal month.
- 10 Find the epoch of the year 1952.

SECTION - B (25 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks (5 x 5 = 25)

- 11 a In the spherical triangle ABC, prove that

$$\cos b \cos C = \sin b \cot a - \sin C \cot A.$$

OR

 b Find the relation between right ascension and longitude of the sun.
- 12 a Find the duration of perpetual day in a place of latitude $\phi > 90^\circ - \omega$.

OR

 b Find the tangent formula for refraction.
- 13 a Obtain the effect of geocentric parallax on the R.A and declination of a place.

OR

 b Find the aberration of a star at a given instant in any given direction.
- 14 a Derive Kepler's equation.

OR

 b Obtain an analytical expression for the equation of time.
- 15 a Discuss the different phases of moon using the formula.

OR

 b Find the minimum number of eclipses in a year.

SECTION - C (30 Marks)

Answer any THREE Questions

ALL Questions Carry EQUAL Marks (3 x 10 = 30)

- 16 Trace the changes in the azimuth of a star in the course of a day.
- 17 Explain the variations in the duration of day and night for a place in the north torrid zone.
- 18 Find the effect of heliocentric parallax on the longitude and latitude of a star.
- 19 Derive stationary values of equation of time.
- 20 Explain the lunar and solar eclipse.