

**PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)**

**BSc DEGREE EXAMINATION MAY 2019
(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 parallactic angle.
- 2 Find the acceleration in the time of rising of a star due to dip of horizon.
- 3 Define refraction of light.
- 4 Define perpetual day.
- 5 Define geocentric parallax of the body.
- 6 Define Parsec.
- 7 State Kepler's equation.
- 8 Define equation of time due to eccentricity.
- 9 Define Metonic cycle.
- 10 Define Occulations.

SECTION - B (25 Marks)

Answer **ALL** Questions

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

- 11 a Prove that the length of an arc of a small circle is equal to the corresponding arc on the parallel great circle multiplied by the sine of its spherical radius.
OR
b Find the condition that twilight may last throughout night.
- 12 a Explain the variations in the duration of day and night for a place on the equator.
OR
b Find Cassini's constants A and B.
- 13 a Compare geocentric parallax and refraction.
OR
b Explain briefly about different kind of aberration.
- 14 a Calculate the eccentricity of the earth's orbit around the sun.
OR
b Prove that $V = m + 2e \sin m + \frac{5}{4}e^2 \sin 2m$.
- 15 a Find the relation between sidereal and synodic months.
OR
b Explain Lunar eclipse.

SECTION - C (30 Marks)

Answer any **THREE** Questions

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

- 16 Explain the equatorial system and horizontal system of co-ordinates used to fix the position of any body in the celestial sphere.
- 17 Find the duration of perpetual day in a place of latitude $\phi > 90^\circ - \omega$.
- 18 Find the effect of horizontal parallax on the longitude and latitude of a star.
- 19 Derive stationary values of equation of time.
- 20 Calculate the major and minor ecliptic limits.