PSG COLLEGE OF ARTS & SCIENCE (AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2022

(Fifth Semester)

Branch-MATHEMATICS

A	ST	R	O	N	O	M	Y

	ECTION-A (10 Marks) Answer ALL questions	Maximum: 75 Marks
	stions carry EQUAL marks	$(10 \times 1 = 10)$
 The relation between Right As a. cos ω tan ⊙ tan φ tan δ 	scension and longitude of the solution ω sin \propto d. tan \bigcirc cos ω	un tan ∝ =
2. The angle between the direction thea. Offingc. Twilight	ons of ordinary horizon and the b. Dip of horizon d. Nautical Almanac	visible horizon is called
3. The region bounded by the equal a. Tropic of Capricornc. North Torrid Zone	uator and the tropic of cancer is b. North Temperate zon d. Arctic circle	
4. The expression for the acceleration	ation in the time of rising of a b	ody due to refraction is
a. $\frac{\rho}{\sigma\sqrt{\cos^2\delta-\sin^2\varphi}}$	b. $\frac{\rho}{\sqrt{\cos^2 \delta + \sin^2 \varphi}}$	
c. $\frac{\rho}{15\sqrt{\cos^2\delta + \sin^2\varphi}}$	$d. \frac{\rho}{15\sqrt{\cos^2 \delta - \sin^2 \varphi}}$	
5 of a body is the	e angle subtended at the body b	y any two positions of
observation a. Parallax c. Geometric parallax	b. Zenith d. Horizon	
6. If the star is at the pole of the e		
a. 90° c. 180°	b. 0 d. cos β	
7. The areal velocity of a planet is	s constant	
a. Kepler's I law c. Kepler's III law	b. Kepler's II law d. Newton's law	
8. Equation of line due to obliquit	$E_2 = $	
a. ⊙+∝ c. <i>l</i> − ⊙	b.⊙–∝ d. <i>l</i> + ⊙	
	of one complete revolution of the	ne moon around the
c. Sidereal month	d. Lunation	
10. The minor lunar ecliptic limit is		

d. 18°31'

c. 9° 30 '

SECTION - B (25 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks

 $(5 \times 5 = 25)$

11.a Prove that the latitude of a place is equal to the altitude of the celestial pole.

OR

- b Find the condition that twilight may last throughout night.
- 12. a Trace the variations in the durations of day and night for a place in the North frigid zone.

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- b Find the tangent formula for refraction.
- 13.a Compare Geometric parallax and refraction.

OR

- b Explain briefly about Parsec and Light year.
- 14.a Prove that $\tan \frac{v}{2} = \sqrt{\frac{1+e}{1-e}} \tan \frac{u}{2}$.

OR

- b Define Morning and Evening. Find the relation between them.
- 15.a Find the relation between Sidereal and synodic months.

OR

b Find the condition for the occurrence of a solar eclipse.

SECTION -C (40 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks

 $(5 \times 8 = 40)$

16.a Explain the equatorial system and horizontal system of co-ordinates used to fix the position of any body in the celestial sphere.

OR

- b Find the time taken by a star to rise from a small vertical distance x" below the horizon.
- 17.a Find the duration of perpetual day in a place of latitude $\varphi > 90^{\circ} \omega$.

OR

- b Find the effect of refraction on the R.A and declination of a star.
- 18.a Find the effect of parallax on the longitude and latitude of a star.

OR

- b Determine the constant of aberration.
- 19. a Derive Kepler's equation.

OR

- b Derive stationary values of equation of time.
- 20. a Explain the lunar and solar eclipse.

OR

b Calculate the major and minor ecliptic limits.