25PHU101/22PHU101N

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2026
(First Semester)

Branch - **PHYSICS**

ASTROPHYSICS & INDIAN SPACE SCIENCE/ ASTROPHYSICS & PHILOSOPHY OF PHYSICS

Time: Three Hours Maximum: 75 Marks

SECTION-A (10 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	Kepler's third law relates (i) Mass and distance (ii) Time and distance (iii) Period and distance (iv) Mass and Time	K1	CO1
	2	Escape velocity on Moon is (i) Less than Earth (ii) Equal to Earth (iii) More than Earth (iv) Zero	K2	CO1
2	3	The point directly below observer is (i) Zenith (ii) Horizon (iii) Equator (iv) Nadir	K1	CO2
	4	The scale of magnitude is larger means, it is (i) Bright star (ii) Dim star (iii) Large star (iv) Small star	K2	CO2
3	5	The difference between apparent and absolute magnitude is called: (i) Brightness constant (ii) Parallax constant (iii) Apparent modulus (iv) Distance modulus	K1	CO3
	6	Larger parallax angle means (i) Larger distance (ii) Smaller distance (iii) Same distance (iv) Infinite distance	K2	CO3
4	7	Which observation supports the expanding universe theory? (i) Galaxies move away from each other. (ii) Galaxies move toward Earth (iii) Stars remain fixed (iv) Sun rotates the galaxies	K1	CO4
	8	A star appears red in colour. What can be analysed about its surface temperature? (i) It has very high temperature (ii) It has low surface temperature (iii) It has medium temperature (iv) It has no temperature	K2	CO4
5	9	Which star is most gravitationally bound? (i) Large radius star (ii) Small radius star (iii) Low mass large radius star (iv) High mass, small radius star	K1	CO5
	10	Which spectral class star is most suitable for supporting long- term planetary life? (i) O-type star (ii) G-type star (iii) B-type star (iv) M-type star	K2	CO5

Cont...

SECTION - B (35 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** Marks (5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Describe the various types of lunar and solar eclipses.	K1	CO2
		(OR)		
	11.b.	List out the contributions of Chandra Bose and Vaina Bappu to the growth of Indian space research		
2	12.a.	Explain the photographic method of measuring apparent magnitude.	K2	CO2
		(OR)		
	12.b.	Explain the local equatorial system.		
3	13.a.	Calculate the distance to a star using trigonometric parallax angle.	K3	CO3
		(OR)		
	13.b.	Apply the cluster parallax method to calculate stellar distance.		
4	14.a.	Explain the construction and working of radio telescope.	K3	CO4
		(OR)		
	14.b.	Analyse the evidence supporting the expanding universe theory.		
5	15.a.	Explain Schoenberg-Chandrasekhar limit in stellar evolution.	K4	CO5
		(OR)		
	15.b.	State and prove the viral theorem of stellar evolution.		

SECTION -C (30 Marks)

Answer **ANY THREE** questions

ALL questions carry **EQUAL** Marks (3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Discuss the different Indian satellites and Launch vehicles developed by ISRO with their purpose.	K1	CO1
2	17	Explain the celestial sphere and describe the different reference circle used in celestial coordinates.	K2	CO2
3	18	Examine different methods and analyse how luminosity and observed brightness are together to determine the distance a stars	K3	CO3
4	19	Compare and analyse planet, asteroids, comets and meteorites based on origin, structure and motion.	K4	CO4
5	20	Estimate the equilibrium and energy transfer from equation of stellar structure.	K4	CO5

Z-Z-Z END