22CHU309N / 22BCU311N

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2025
(Third Semester)

Common to Branches – **CHEMISTRY & BIOCHEMISTRY**

PHYSICS - I

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	The frequency of simple harmonic motion is _____. a) number of vibrations per second b) number of oscillations per second c) number of rotations per second d) number of twists per second	K1	CO1
	2	In the longitudinal mode of Melde's experiment, the tuning fork vibrates _____ the length of the string. a) up and down with b) perpendicular to c) along the direction of d) side by side with	K2	CO1
2	3	Lubrication is used to _____. a) increase friction b) decrease friction c) increase temperature d) decrease speed	K1	CO2
	4	Surface tension decreases with _____ of the liquid. a) increase in surface area b) increase in temperature c) increase in density d) decrease in pressure	K2	CO2
3	5	Which of the following processes cause a decrease in entropy? a) melting of ice b) evaporation of water c) freezing of water d) boiling of water	K1	CO3
	6	Helium II is formed when Helium I is cooled below_____ a) 2.19K b) 2.17K c) 2.71K d) 2.41K	K2	CO3
4	7	The capacitance of a parallel plate capacitor increases with_____. a) decreasing plate area of capacitor b) increasing distance between plates c) using dielectric slab between them d) using copper plates	K1	CO4
	8	In a purely resistive circuit, the value of power factor is _____. a) zero b) one c) infinity d) half	K2	CO4
5	9	Dispersion of light is caused by_____. a) equal speed of all colours in a medium b) different speeds of different colours in medium c) reflection d) absorption	K1	CO5
	10	Constant deviation prisms are commonly used in _____. a) telescopes b) cameras c) binoculars d) spectrometers	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.	Discuss on the laws of transverse vibration of strings.	K2	CO1
		(OR)		
	11.b.	Describe the measurement of frequency of AC main using Sonometer with neat sketch.		
2	12.a.	Examine on the determination of Rigidity modulus of a wire by torsional pendulum.	K4	CO2
		(OR)		
	12.b.	Simplify on the molecular theory of surface tension of liquids.		
3	13.a.	Examine and discuss on the Porous plug experiment using Joule-Kelvin effect.	K4	CO3
		(OR)		
	13.b.	Analyze on the change of entropy in a reversible process by plotting a PV diagram.		
4	14.a.	Construct a capacitor using a pair of metal plates and derive an expression for the energy stored in the charged capacitor.	K3	CO4
		(OR)		
	14.b.	Develop and derive the expression for peak, average and RMS value of an alternating current.		
5	15.a.	Illustrate on the calculation of refractive index of a prism by grazing incidence method.	K3	CO5
		(OR)		
	15.b.	Outline the construction and use of direct vision prisms.		

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	Analyze on the production of Ultrasonic waves using Piezo electric method.	K4	CO1
2	17	Analyze on the comparison of viscosities of two liquids using burette method with neat sketch.	K4	CO2
3	18	Examine on Liquefaction of gases. Illustrate on Linde's process of liquefaction of air.	K4	CO3
4	19	Examine on Biot-Savart law. Derive an expression for the magnetic field induction(B) along the axis of a coil carrying current.	K4	CO4
5	20	Examine the air cell method of determining the refractive index of a liquid with neat sketch.	K4	CO5

Z-Z-Z END