

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2026
(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	Lissajous figures are used to determine which of the following between two signals? a) temperature difference b) voltage drops c) phase difference and frequency ratio d) current direction	K1	CO1
	2	Which crystal is commonly used in the piezo electric method to produce Ultrasonic waves? a) quartz b) diamond c) graphite d) silicon	K2	CO1
2	3	A perfect rigid body has a rigidity modulus which is equal to _____. a) zero b) infinity c) one d) half	K1	CO2
	4	Which of the following liquids has the lowest viscosity at room temperature? a) honey b) water c) glycerin d) crude oil	K2	CO2
3	5	Which effect is used in the liquefaction of gases like Helium? a) Joule-Kelvin effect b) Thomson effect c) Photo electric effect d) Peltier effect	K1	CO3
	6	The temperature of inversion of a gas is _____ its critical temperature. a) higher than b) lower than c) equal to d) zero at	K2	CO3
4	7	The RMS value of AC voltage $E = E_0 \sin \omega t$ is _____. a) E_0 b) $E_0/2$ c) $E_0/\sqrt{2}$ d) zero	K1	CO4
	8	A choke coil works on the principle of a) capacitance b) resistance c) inductance d) conductance	K2	CO4
5	9	At minimum deviation, the light ray inside the prism _____. a) travels along the base b) gets reflected c) passes symmetrically d) does not bend	K1	CO5
	10	A direct vision prism is used to produce _____. a) deviation only b) dispersion only c) dispersion without deviation d) deviation without dispersion	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.	Analyze on the composition of two simple harmonic motion of equal time periods at right angles to each other.	K4	CO1
		(OR)		
	11.b.	Distinguish between Ultrasonic waves and audible waves. Explain how the Ultrasonic waves are used in the field of science and medicine.		
2	12.a.	Analyze on torsion in a wire. Derive an expression for the torque produced per unit twist in a wire.	K4	CO2
		(OR)		
	12.b.	Examine on surface tension of a liquid. Derive an expression for excess pressure inside (i) a liquid drop (ii) inside a soap bubble.		
3	13.a.	Develop and explain the theory of Porous plug experiment.	K3	CO3
		(OR)		
	13.b.	Identify and explain all the three laws of thermodynamics.		
4	14.a.	Build a capacitor using a pair of metal plates and prove that when two charged conductors share their charges there is always a loss of energy.	K3	CO4
		(OR)		
	14.b.	Construct and derive an expression for magnetic induction at a point on the axis of a coil.		
5	15.a.	Outline on the determination of refractive index of a liquid by air cell method.	K2	CO5
		(OR)		
	15.b.	Summarize on how two narrow angled prisms can be combined to produce deviation without dispersion.		

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	Examine that how the frequency of tuning fork with transverse and longitudinal mode of vibration can be measured by Melde's experiment.	K4	CO1
2	17	Analyze and discuss the determination of Young's modulus of the material by Non-Uniform bending method.	K4	CO2
3	18	Examine on the principle of adiabatic demagnetization. Discuss how the paramagnetic substance is magnetised and demagnetised when it is placed between the magnetic fields.	K4	CO3
4	19	Analyze and derive an expression for the power factor and current values in an AC circuit.	K4	CO4
5	20	Analyze that how the refractive index of (i) a rectangular glass slab and (ii) a transparent liquid can be measured using a travelling microscope.	K4	CO5