

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
BSc DEGREE EXAMINATION DECEMBER 2024
(First Semester)
Branch – **PHYSICS**

PROPERTIES OF MATTER AND SOUND

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	Choose the maximum elasticity is in a)Rubber b)Glass c)Silver d)Steel	K1	CO1
	2	Show the unit of Young's modulus a)N/m b)N-m c)N/m ² d)N/Kgm	K2	CO1
2	3	Which property measures the resistance of a liquid flow? a)density b)viscosity c)solubility d)volume	K1	CO2
	4	Interpret the viscosity of liquids decreases rapidly with an ----- in temperature a)decrease b)increase c)equal d)no change	K2	CO2
3	5	Osmosis is a special kind of ----- a)regulation b)absorption c)diffusion d)none of the above	K1	CO3
	6	Relate the method to determine surface tension of a liquid? a)Bernoulli's method b)Jaeger's method c)Poiseuille's method d)viscometer	K2	CO3
4	7	Which is not the property of longitudinal wave? a)amplitude b)vibration c)compression d)density	K1	CO4
	8	The change in frequency of a wave with respect to an observer who is moving relative to the wave source a)SHM b)Doppler effect c)compression d)rarefaction	K2	CO4
5	9	Which one of the following materials is piezo-electric material? a)Copper b)Tourmaline c)sodium chloride d)Aluminium	K1	CO5
	10	Concave surfaces in a hall should be covered with sound absorbing materials to avoid a) Reverberation b)Echelon effect c) Resonance d)Focussing	K2	CO5

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.	Demonstrate the theory of torsion pendulum to determine rigidity modulus.	K2	CO1
	(OR)			
	11.b.	Outline the theory of Koenig's to find Young modulus.		

Cont...

2	12.a.	Apply Stoke's method for determining the viscosity of a viscous liquid.	K3	CO2
	(OR)			
	12.b.	Develop the theory of variation of viscosity with temperature.		
3	13.a.	Experiment with Interfacial surface tension between water and kerosene.	K3	CO3
	(OR)			
	13.b.	Apply the theory of Quincke's method to find surface tension.		
4	14.a.	Compare longitudinal and transverse waves.	K4	CO4
	(OR)			
	14.b.	Survey the effect of wind velocity.		
5	15.a.	Inspect the piezo electric generator to produce ultrasonic waves.	K4	CO5
	(OR)			
	15.b.	Dissect the factors affecting acoustic of buildings.		

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	Define rigidity modulus and derive an expression for couple per unit twist.	K5	CO1
2	17	Derive Poiseulle's formula for the flow of liquid through a capillary tube with its correction.	K4	CO2
3	18	Explain in detail Jaeger's method for measuring surface tension of a liquid.	K4	CO3
4	19	Derive an expression for the equation of motion of simple harmonic oscillator and find its solution.	K5	CO4
5	20	What are ultrasonic waves? How are they produced using a magnetostriction oscillator?	K4	CO5

Z-Z-Z

END