

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2017
(First Semester)

Branch- PHYSICS

PROPERTIES OF MATTER & ACOUSTICS

Time : Three Hours

Maximum : 75 Marks

SECTION-A (20 Marks)

Answer ALL questions

ALL questions carry EQUAL marks (10 x 2 = 20)

- 1 Define Hooke's law.
- 2 What is bending moment?
- 3 Define coefficient of viscosity.
- 4 State Newton's law.
- 5 Define surface tension?
- 6 What is surface energy?
- 7 Write the equation of wave motion.
- 8 What is resonance?
- 9 What are ultrasonics?
- 10 Define absorption coefficient.

SECTION - B (25 Marks)

Answer ALL Questions

ALL Questions Carry' EQUAL Marks (5 x 5 = 25)

- 11 a Explain the three moduli of elasticity.
OR
b What is cantilever? Derive an expression for depression of a cantilever.
- 12 a Explain Poiseuille's flow for determining coefficient of viscosity.
OR
b Describe the construction and working of air pump for producing low pressure.
- 13 a Derive the pressure difference across a curved surface.
OR
b Explain the Vapor pressure over flat and curved surface.
- 14 a What are transverse and longitudinal waves? Explain it.
OR
b State and explain Doppler effect.
- 15 a Describe the construction and working of magneto s friction oscillator to produce ultrasonic waves.
OR
b What are the conditions for good acoustical design of an auditorium?

SECTION - C (30 Marks)

Answer any THREE Questions

ALL Questions Carry EQUAL Marks (3 x 10 = 30)

- 16 i) Show that the twisting couple of a cylinder is $C = \frac{4}{8s}$.
- ii) Determine the rigidity modulus of a wire using torsional pendulum.
- 17 Describe with neat diagram, the construction and working of Knudsen gauge for measuring the low pressure.
- 18 Describe with appropriate diagram, the construction and working of Jaeger's method for the determination of surface tension.
- 19 Determine the velocity of sound waves through gases.
- 20 What is reverberation time? Obtain the Sabine's reverberation formula.