

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
BSc DEGREE EXAMINATION DECEMBER 2018
(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 State Hooke's law.
- 2 Define internal bending moment.
- 3 State Bernoulli's theorem.
- 4 Define coefficient of viscosity of a liquid.
- 5 What is Surface energy?
- 6 Define the angle of contact.
- 7 Write down the expression for the energy of wave motion.
- 8 Define Resonance process.
- 9 Define Ultrasonic waves.
- 10 Write any two medical application of ultrasonic waves.

SECTION - B (25 Marks)

Answer **ALL** Questions

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

- 11 a Define E, G, K and ρ . Obtain the relation connecting these quantities.
OR •
b What is meant by beam? Explain the terms neutral surface, neutral axis, plane of bending and bending moment of a beam.
- 12 a Describe a diffusion pump and explain its working. What is the order of vacuum it can reach?
OR
b Describe Pirani gauge.
- 13 a Enumerate the pressure difference across a curved surface.
OR
b Explain the Jaeger's method.
- 14 a Give the characteristics of Musical sound.
OR
b Write down the applications of Doppler effect.
- 15 a Define and determine the absorption coefficient in Acoustics.
OR
b Outline the conditions for good auditorium.

SECTION - C (30 Marks)

Answer any **THREE** Questions

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

- 16 What is torsional oscillation? How will you determine the rigidity modulus if a wire using torsion pendulum?
- 17 Describe McLeod gauge and explain how you actually use it to measure the low pressure in a vacuum system?
- 18 Explain Quincke's drop method.
- 19 Derive the expression for the velocity of transverse vibrations along a stretched string.