Roll.No. | 22UMAAT1D01

SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN
(AUTONOMOUS)
(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)
Chromepet, Chennai - 600 044.
B.Sc.Mathematics - END SEMESTER EXAMINATIONS - NOVEMBER 2025
SEMESTER - I
22UMAAT1D01 - Allied Physics - I

Total Duration : 2 Hrs.30 Mins. Total Marks : 60

Section B

Answer any **SIX** questions $(6 \times 5 = 30$ Marks)

1. Define simple harmonic motion and illustrate with one practical example.
2. Show how two simple harmonic motions of equal time periods acting at right angles produce Lissajous figures.
3. State Hooke's law and describe the significance of the elastic constants.
4. Apply the concept of torsion in determining rigidity modulus using a torsional pendulum.
5. Derive Poiseuille's formula for the flow of liquid through a capillary tube.
6. Describe the drop weight method for determining surface tension.
7. Interpret the laws of transverse vibration of strings with reference to the sonometer experiment.
8. Compute the magnetic induction at a point on the axis of a circular coil carrying current.

Section C

Answer any **THREE** questions $(3 \times 10 = 30$ Marks)

9. Apply Fourier theorem to analyze periodic functions and illustrate its importance in wave analysis.
10. Classify the three elastic constants and relate them to the physical behavior of real materials.
11. Justify the choice of experimental methods for determining the viscosity and surface tension, also infer their accuracy.
12. Predict the behavior of ultrasonic waves produced using the piezoelectric method and apply them to any one industrial or medical applications.
13. Contrast the calibration of a low-range voltmeter using a potentiometer with the comparison of two emf values and assess the advantages and limitations of each.

*****