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 - NOV'2024
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. What is simple harmonic motion? Derive an equation of it.
2. Sketch an expression for the period of oscillation of a torsional pendulum.
3. Describe an experiment to compare the viscosities of two liquids.
4. Explain how you will determine AC frequency using sonometer.
5. State and Explain Biot-Savart law.
6. What are Lissajous figures? Mention the uses of it.
7. A bar of length 0.6m and thickness 3mm and breadth 4cm in supported at its two ends and loaded in the middle. For a load of 0.4kg the depression at the centre is 2 x 10^{-3}m . Calculate the Young's modules of the bar.
8. Deduce an expression for the magnetic field due to a current carrying conductor.

Section C

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

9. Describe analytically the compounding of two SHMs in mutually orthogonal directions.
10. Prepare and write with necessary theory how you would determine the rigidity modulus of the material of the rod by static torsion method.
11. Derive Poiseuille's formula to find the coefficient of viscosity of a given liquid.
12. Apply the principle of piezoelectric method for producing ultrasonic waves and explain it with necessary diagram.
13. Deduce an expression for the magnetic induction due to a current in a circular coil of wire at a point on its axis.

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