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. END SEMESTER EXAMINATIONS APRIL-2023
SEMESTER - I
16UMAAT1PH1 - ALLIED PHYSICS PAPER – I

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

Section A

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

1. List out the differences between free, damped and forced vibrations.
2. Define modulus of elasticity. Derive an expression for the relation between elastic constants.
3. Describe with theory, the drop weight method to determine the surface tension of a liquid.
4. Explain the production of ultrasonic waves by piezoelectric method.
5. List out the uses of ultrasonics in various fields.
6. State the principle of potentiometer. Explain with neat circuit diagram, how a low range voltmeter can be calibrated using a potentiometer.
7. Explain with necessary theory, the experiment to determine the rigidity modulus of the material of a rod by static torsion method.
8. Describe the burette method to determine the ratio between the viscosities of two liquids and hence derive an expression for it.

Section B

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

9. What areLissajou's figures? Illustrate the resultant motion of two simple harmonic motions at right angles.
10. Derive an expression for the couple per unit twist in a wire. Hence apply it to determine its rigidity modulus using torsional pendulum.
11. Derive Poiseuille's formula to determine the coefficient of viscosity of a liquid.
12. Derive Vander Waal's equation of state and hence apply it to obtain expressions for the critical constants in terms of Vander Waal's constants.
13. State Biot-Savart's law. Deduce an expression for the magnetic induction at a point on the axis of a circular coil carrying current.

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