B.Sc. DEGREE EXAMINATION,APRIL 2020
I Year I Semester
Allied Physics - I

Time : 3 Hours **Max.marks :60**

Section A $(10 \times 1 = 10)$ Marks

Answer any **TEN** questions

1. Give the relation for an acceleration of a particle executing simple harmonic motion.
2. How Lissajou's figures are formed?
3. Name the three types of modulii of elasticity.
4. Define poisson's ratio.
5. Define co-efficient of viscosity.
6. Write the SI unit and dimensional formula for surface tension.
7. Write any three postulates of kinetic theory of gases.
8. Define critical constants.
9. State Biot-Savart's law.
10. State the principle of potentiometer.
11. Define forced vibrations.
12. Calculate Poisson's ratio for silver. Given its young's modulus $= 7.25\ X\ 10^{10}\ N/m^2$ and bulk modulus $= 11\ X\ 10^{10}\ N/m^2$.

Section B $(5 \times 4 = 20)$ Marks

Answer any **FIVE** questions

13. Two simple harmonic motions act in the same direction upon a particle simultaneously. What will be resultant motion of the particle?
14. Describe the method of finding the Young's modulus of the material of a bar by non-uniform bending.
15. Explain with necessary theory how the potentiometer is used to calibrate a low range voltmeter.
16. Derive Vander Wall's equation of state of gases.
17. Give any six applications of ultrasonic wares.
18. What torque must be applied to a wire one metre long, 10^{-3} metre in diameter in order to twist one end of it through 90°, the other end remaining fixed? The rigidity of the material of the wire is $2.8\ X\ 10^{10}\ Nm^{-2}$.
19. Explain the determination of surface tension of a liquid by drop weight method.

Section C $(3 \times 10 = 30)$ Marks

Answer any **THREE** questions

20. Obtain an expression for the resultant amplitude when two simple harmonic motions of equal period are acting at right angles to each other. Discuss the different cases depending on the phase angle.
21. Describe an experiment to determine the rigidity modulus of a metal rod by static torsion method.
22. Derive Poiseuille's formula for the rate of flow of a liquid through a capillary tube.
23. Describe the piezo electric method of producing ultrasonics.
24. Derive an expression for the magnetic field at any point on the axis of the coil carrying current.

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