B.Sc. DEGREE EXAMINATION,NOVEMBER 2018
II Year III Semester
Allied - Paper III
ALLIED PHYSICS - I

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

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

Answer any **TEN** questions

1. Define Simple Harmonic Motion.
2. What are free and forced vibrations?
3. What are the three modulii of elasticity?
4. Define rigidity modulus of a material. What is its unit?
5. Define coefficient of viscosity and give its unit.
6. Define surface tension.
7. What are critical constants of a gas?
8. What are ultrasonic waves?
9. State the principle of potentiometer.
10. State Biot-Savart's law.
11. What are damped vibrations?
12. Write any two postulates of kinetic theory of gases.

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

Answer any **FIVE** questions

13. What are Lissajou's figures? Mention its applications.
14. Explain how the rigidity modulus of the material of a rod is determined by the static torsion method.
15. Explain how the surface tension of the liquid is determined by the drop weight method.
16. Describe the piezoelectric method for production of Ultrasonic waves.
17. Explain the theory of potentiometer. How it is used to calibrate the low range voltmeter?

18. List any eight applications of ultrasonic waves.

19. A circular coil has a radius of 0.1 m and a number of turns of 50. Calculate the magnetic induction at the centre of the coil, when a current of 0.1 A flows in it.

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

Answer any **THREE** questions

20. Discuss the composition of two simple Harmonic motions along a straight line.

21. Derive the relation between the elastic constants.

22. Derive Poiseuille's formula for the rate of flow of liquid through a capillary tube.

23. Derive Van der waal's equation of state and use it to obtain the expression for the critical constants in terms of the constants of the van der waal's equation.

24. Derive an expression for the magnetic field at a point on the axis of a circular coil carrying a current.

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