B.Sc. DEGREE EXAMINATION, APRIL 2018.

II YEAR - III SEMESTER

Core Allied Paper - ALLIED PHYSICS - I

Time : 3 Hours Max. Marks :60

SECTION A – (10 × 1 = 10 marks)

(Q. No. 1-12)Answer any *TEN* questions

1. What is meant by epoch of SHM?
2. Define damped vibrations of a particle.
3. Express the modulus of elasticity.
4. Give an expression for a time period of oscillations of a torsional pendulum.
5. What is critical velocity?
6. State the unit and dimension of Surface tension.
7. What is mean free path?
8. Mention any two properties of ultrasonics.
9. What is potentiometer?
10. State Biot-Savart's law of elasticity
11. Define rigidity modulus.
12. Find the magnetic induction at the centre of a square current loop of side 1 metre carrying a current of 1 ampere.

SECTION B – (5 × 4 = 20 marks)

(Q. No. 13-19)Answer any *FIVE* questions

1. What are Lissajous figures? How are they produced?
2. Show that E= 9GK/3k+G.
3. Describe the drop weight method of determining the surface tension of a liquid.
4. Derive Van der Waals equation of state.
5. Explain how will you calibrate a low range voltmeter using potentiometer.
6. Describe an experiment to find Young's modulus of a bar by non-uniform bending.
7. Water flows through a horizontal tube of length 0.2m and internal radius 8.1x 10-4 under a constant head of the liquid 0.2m height in 12 minutes 8.64x10-4m3 of liquid issues from the tube. Calculate the coefficient of viscosity of water. The density of water 1000kg/m3 and g = 9.8m/s2.

SECTION C – (3 × 10 = 30 marks)

(Q. No. 20-24)Answer any *THREE* questions

1. Discuss with theory the composition of two SHM of equal time periods at right angles to each other and also the different important cases.
2. Explain with necassary theory how will you find the rigidity modulus of the wire.
3. Derive Poiseuille's formula for the rate of flow of liquid through a capillary tube. Describe a laboratory method to determine the coefficient of viscosity of a liquid.
4. Explain how ultrasonic waves are produce by Piezo electric method.
5. Derive an expression for the field along the axis of a circular coil carrying current.