

## Question Bank (G scheme)

Name of subject:PHYSICS

Subject code: 17102

Semester: I

Unit Test :I

Course : ALL

### Chapter:1 PROPERTIES OF SOLIDS[8 marks]

Questions for 2 marks:

1. Define Deforming Force & Restoring force.
2. Define Elasticity and give example.
3. State Hooke's Law of Elasticity.
4. Explain the concept of Poisson's ratio.
5. Calculate strain produced in a wire under tension when its stress is  $24 \times 10^5 \text{ kg/m}^2$ ,  $Y$  for the material is  $4 \times 10^6 \text{ kg/m}^2$ .

Q.2 Questions for 3 Marks

1. Explain Molecular theory of Elasticity.
2. Define Young's Modulus, Bulk modulus & Modulus of rigidity.
3. Define Strain And explain its types.
4. A metal cube is subjected to stress of  $4 \times 10^{10} \text{ N/m}^2$ , each cube is shortened by 2%. Find volume strain and Bulk modulus of metal.

Q.3 Questions for 4 Marks.

1. Explain Behavior of a wire under continuously increasing load.
2. A wire of length 1.5m extends by 1.5mm when a force is applied to it. Calculate the Stress produced in it. Given  $Y = 2 \times 10^{11} \text{ N/m}^2$ .
3. Define Breaking Stress, Ultimate Stress, Working stress and Factor of safety.

### CHAPTER 2: PROPERTIES OF LIQUID[12 marks]

Questions for 2 marks:

1. Define Velocity Gradient and state its Unit.
2. Define Viscosity and give SI unit of coefficient of viscosity.
3. State Archimede's Principle.
4. State Pascal's Law of pressure on liquid with example.
5. Calculate the pressure at a depth 5m inside the water.
6. Explain the effect of temperature and adulteration on viscosity of liquid.
7. Define Adhesive force and Cohesive force.
8. Define Surface Tension & give its Unit.

Questions for 3 Marks

1. Explain Newton's Law of Viscosity.
2. Explain Reynold's number and Give its significance.
3. Derive an expression for pressure-depth relation.
4. A liquid flows through a pipe of radius 4cm with a speed of 12m/s. The density of liquid is  $0.85 \times 10^3 \text{ kg/m}^3$  and coefficient of viscosity is  $0.6 \text{ Ns/m}^2$ . Determine Reynold's no. & type of flow of liquid.
5. Define Angle of contact .State its significance.

Questions for 4 Marks.

1. A spherical ball of radius 2.2mm and density  $8 \times 10^3 \text{ kg/m}^3$  falls through liquid of density  $1.3 \times 10^3 \text{ kg/m}^3$ . Coefficient of viscosity =  $0.45 \text{ Ns/m}^2$ . Find the Terminal velocity.
2. Explain Molecular theory of Surface tension.
3. Derive formula for surface Tension  $T = r h d g / 2 \cos \theta$
4. Derive an equation for coefficient of viscosity by Stoke's Method.
5. Distinguish between Streamline flow and Turbulent flow.