Additional Conceptual Short Questions with Answers

1. What is meant by hysteresis losses? How is it used in the construction of a transformer?

Ans. Hysteresis loss:

When a ferromagnetic material is placed in an alternating current solenoid, the energy is needed to magnetize and demagnetize the material during each cycle of magnetizing current. This energy is needed to do work against internal friction of domains. This work is lost as heat. It is called hysteresis loss.

Use in the construction of transformer.

2. Which is more elastic, steel or rubber? Why?

Ans. Steel. Because, modulus of rigidity= $\frac{stress}{strain}$ Consider a steel and rubber wire of equal lengths and equal cross-section areas. If the same force is applied to both, then strain of rubber is more. i.e., its elasticity is less or steel is more elastic.

3. A spring is made of steel and not of copper; why?

Ans. Young's modulus of steel is more. Within the elastic limit, steel can bear larger tension. Also, steel recovers its original state quickly.

4. Why the amorphous solids or glassy solids are referred as solid liquids?

Ans. Amorphous solids or glassy solids are referred as solid liquids, because amorphous solids are more like liquids with the disordered structure frozen in.

Self-Assessment Paper 1

Q.No.2 Write Short Answers any SIX of the following questions.

1. What is difference between amorphous and crystalline solids?
2. What is meant by elastic limit of a material?
3. Define elastic modulus? Give its three types with units.
4. Draw the hysteresis curve for soft and hard magnetic materials.
5. State hook law for an elastic material?
6. Describe the formation of energy bands.
7. Describe the terms UTS and fracture stress for a tensile material.

Q.No.3 Extensive Question.

Q. (a) Describe hysteresis loop for a ferromagnetic material by drawing its curve.

(b) A force of 500N is applied to one end of a cylindrical steel rod of diameter 50cm. What is the tensile stress?

Self-Assessment Paper 2

Q.No.2 Write Short Answers any SIX of the following questions.

1. What are ferro and dia magnetic materials?
2. What does forbid energy band express according to energy band theory?
3. What are difference between hardness and toughness of the tensile material?
4. What are super conductors? Also define the critical temperature

5. Define unit cell, basis and space lattice.

6. Evaluate the importance of strength and stiffness of a material.

7. What do you mean by stain energy, give its formula.

Q.No.3 Extensive Questions.

Q. (a) Explain the strain energy in a deformed wire by drawing its graph.
(b) A 1.50 cm length of pianos wire with a diameter of 0.25 cm is stretched by attaching a 10 kg mass to one end. How far the wire stretched?