B. TECH.

THEORY EXAMINATION (SEM–VIII) 2016-17

ELECTRICAL AND ELECTRONICS ENGG. MATERIALS

Time : 3 Hours   *Max. Marks : 100*

Note : *Be precise in your answer. In case of numerical problem assume data wherever not provided.*

SECTION – A

1. **Attempt all parts of the following questions:**   10 x 2 = 20
   - (a) Define fatigue in materials.
   - (b) What are unit cells?
   - (c) Define polymorphism and allotropy in crystal.
   - (d) Classify different solid materials based on conductivity.
   - (e) Define Fermi energy.
   - (f) What do you mean by doping?
   - (g) Write few applications of superconductivity
   - (h) What do you mean by ionic bonds .Give example.
   - (i) Define magnetic induction, or magnetic flux density.
   - (j) What are intrinsic and extrinsic semiconductors?

SECTION – B

2. **Attempt any five of the following questions:**   5 x 10 = 50
   - (a) Explain superconductivity phenomenon in detail.
   - (b) Explain X-RAY diffraction phenomenon.
   - (c) Explain piezoelectricity in materials.
   - (d) Explain transistors and their phenomenon of operation.
   - (e) Explain types of polarization.
   - (f) Explain Hall Effect in detail.
   - (g) Determine atomic packing fraction and volume of FCC crystal structure.
   - (h) Explain stress strain concept in solids.

SECTION – C

Attempt any two of the following questions: 2 x 15 = 30

3. Explain defects in crystals.
4. Draw table for Lattice Parameter Relationships and Figures Showing Unit Cell Geometries for the Seven Crystal Systems.
5. Classify different magnetic materials.