

--	--	--	--	--	--	--	--	--	--

**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.