

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.