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# 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.