

B.TECH. - VIEP-ELECTRICAL ENGINEERING

Term-End Examination

June, 2012

**BIEE-013 : ELECTRICAL AND ELECTRONICS
ENGINEERING MATERIALS**

Time : 3 Hours

Maximum Marks : 70

Note : Attempt any seven questions.

Each equation carries (10) marks.

1. Explain the formation of primary bonds in solids 10
2. What do you mean by Miller Indices ? What are the important features of miller indices ? 10
3. Explain X - ray diffraction techniques in detail 10
4. State the different types of bonds and their characteristics. 10
5. What is Hall's effect and its applications ? Derive the expression for mobility using Hall's effect 10
6. (a) Explain the effect of temperature on electrical conductivity of metals 5
(b) Explain the phenomenon of 'superconductivity' 5

7. Explain the phenomenon of drift and diffusion 10
8. A FCC unit cell has a lattice constant $a = 4.0 \times 10^{-10} \text{m}$ calculate the number of atoms per unit area on (110) and (111) planes and density of atoms per unit length in directions [110] and [111] 10
9. Discuss the various properties of magnetic materials 10
10. Write short notes on : (Attempt *any two* parts)
- (a) P - N junction diode 5x2=10
 - (b) Bragg's Law
 - (c) Atomic packing factor.
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