

**B.Tech. - VIEP - ELECTRICAL ENGINEERING
(BTELVI)**

Term-End Examination

June, 2015

00466

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

Time : 3 hours

Maximum Marks : 70

*Note : Answer any **seven** questions. All questions carry equal marks.*

1. What do you mean by co-ordination number ?
Write down the co-ordination number, atomic radius, atoms per unit cell and atomic packing factor for simple cubic, face centred cubic and body centred cubic crystal lattice. 10

2. Describe the energy bands in solids. Elaborate the classification of materials on the basis of band theory. 10

3. Derive the expression for heat developed in current carrying conductor. 10

4. What do you mean by thermoelectric effect ?
Explain Seebeck effect, Peltier effect and Thomson effect. 10

5. Explain the phenomenon of generation of electron-hole pairs with the help of crystalline structure of semiconductor. 10
6. Explain the operation of p-n-p transistor for cut-off, active and saturation region. 10
7. What is magnetostriction effect ? What are its applications ? Explain any one in detail. 10
8. Define the following terms for a magnetic material : 5×2=10
- (a) Magnetic flux density
 - (b) Magnetic field strength
 - (c) Intensity of magnetisation
 - (d) Magnetic susceptibility
 - (e) Magnetic permeability
9. Derive the expression for continuity equation. What do you mean by diffusion and drift current ? 10
10. Write short notes on any *two* of the following : 2×5=10
- (a) X-ray Diffraction
 - (b) Antiferromagnetism
 - (c) Field Effect Transistor
 - (d) Bragg's Law
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