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BIEE-013

B.Tech. – VIEP – ELECTRICAL ENGINEERING

(BTELVI)

00436 **Term-End Examination**

June, 2014

BIEE-013 : ELECTRICAL AND ELECTRONICS ENGINEERING MATERIALS

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any **seven** questions. Assume the missing data if, any.*

1. What is atomic packing factor ? Obtain the atomic packing factor for body centered cubic (BCC) structure. *10*

2. What is Bragg's law ? Also discuss its application. *10*

3. Discuss the concept of energy band. What is the role of these energy bands in the crystal structure ? *10*

4. Explain the phenomenon of conductor heating while carrying a current. Also give appropriate mathematical expressions. *10*

5. Give a comparison between conducting and insulating materials. Also discuss few applications. *10*

6. What are the current carriers in semi-conductors ? Explain the phenomenon of current flow in semi-conductors with the help of neat diagram. *10*

7. Explain the working of p-n junction. Also explain the formation of depletion region in various modes. *10*

8. Explain the working of Field-Effect Transistor (FET). Also draw the V – I characteristics and show various regions. *10*

9. What is magnetic hysteresis ? Also give classification of magnetic materials. *10*

10. Write short notes on any ***two*** of the following : *2×5=10*

    (a) Continuity equation

    (b) Permanent magnetic materials

    (c) Junction transistors