PVP 12

Code: EE4T5

II B.Tech - II Semester – Regular Examinations - JUNE 2015

MATERIAL SCIENCE
(ELECTRICAL & ELECTRONICS ENGINEERING)

Duration: 3 hours Marks: 5x14=70

Answer any FIVE questions. All questions carry equal marks

1 a) What is energy band theory? Classify materials based on energy band theory. 7 M

b) Write short notes on electrical properties of engineering materials. 4 M

c) Differentiate metals and non-metals. 3 M

2 a) What are the factors affecting resistivity of a conducting material? 7 M

b) What are the materials used for brushes in electrical machines? Give reasons. 4 M

c) List the differences between semiconductors and conductors. 3 M

3 a) Classify the insulating materials based on their working temperature. 7 M

b) Write short notes on liquid insulating materials. 4 M

c) What is the effect of temperature on the properties of insulating materials? 3 M

4 a) What is the difference between an insulating material and dielectric material? 4 M

b) What is dielectric constant? What is its significance? 4 M

c) What are the properties of ferroelectric materials? 6 M

5 a) Compare ionic and electronic polarization. 5 M

b) Write short notes on complex dielectric constant. 4 M

c) What are dielectric losses? Why do they occur? 5 M

6 a) Explain the concept of induced dipole moment. 5 M

b) Define orbital magnetic dipole moment and angular momentum. 5 M

c) What is the effect of temperature on the properties of magnetic materials? 4 M

7 a) What is B-H curve? Classify the magnetic materials based on the area of B-H loop. 7 M

b) What are the losses in magnetic materials? How can they be minimized? 7 M

8 a) Explain how magnetic properties of a material can be Measured? 7 M

b) How is electrical conductivity measured? 7 M