CBCS Scheme

Third Semester B.E. Degree Examination, June/July 2017
Basics of Material Science

Time: 3 hrs.   Max. Marks: 80

Note: *Answer FIVE full questions, choosing one full question from each module.*

Module-1

1   a.   Explain about atomic, nano, micro and macro structures and their importance.   (06 Marks)
    b.   Explain about the classification and importance of rheological fluids.   (06 Marks)
    c.   What are Chromic materials? Mention their classifications.   (04 Marks)

OR

2   a.   Write a brief note on nanomaterials classification.   (08 Marks)
    b.   Discuss in detail about shape memory materials.   (08 Marks)

Module-2

3   a.   Write a brief note on Electrical resistivity and four probe method.   (10 Marks)
    b.   Discuss about super conductors and their technological applications.   (06 Marks)

OR

4   a.   Explain about conductors, semiconductors and insulators based on band gap energy and bonding model.   (12 Marks)
    b.   Distinguish between BJT and MOSFET.   (04 Marks)

Module-3

5   a.   Define Specific, Molar and Volume heat capacities. Mention the factors affecting specific heat capacity.   (05 Marks)
    b.   Which are the factors affecting thermal expansion? Explain about the applications of thermal expansion property.   (05 Marks)
    c.   Differentiate between hard and soft magnetic materials.   (06 Marks)

OR

6   a.   Explain about applications of OMR and GMR.   (08 Marks)
    b.   Define Magnetic dipole, Dipole moment, Susceptibility and Permeability.   (04 Marks)
    c.   Explain about Bohr Magneton.   (04 Marks)

Module-4

7   a.   What are Photonics? Explain about the importance and applications of photonic materials.   (08 Marks)
    b.   What is Absorption Spectroscopy? Explain the concept of measuring absorbance.   (08 Marks)

OR

8   a.   What is Birefringence? Explain about uniaxial and biaxial refrigent materials.   (08 Marks)
    b.   Describe about the construction and working of LCD's.   (08 Marks)

Module-5

9   a.   Discuss about point defects of materials.   (10 Marks)
    b.   What is UTM? Explain about the components of a UTM.   (06 Marks)

OR

10 a.   Discuss briefly about Surface Imperfections.   (06 Marks)
    b.   What is Hardness? Explain about Brinell and Rock well hardness tests.   (10 Marks)

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