B.TECH.
THEORY EXAMINATION (SEM–IV) 2016-17
MATERIAL SCEINCE

Time : 3 Hours   *Max. Marks : 100*

Note : *Be precise in your answer. In case of numerical problem assume data wherever not provided.*

SECTION – A

1.   **Explain the following:**   **10 x 2 = 20**
   (a)   What is solid solution?
   (b)   Define unit cell and space lattice.
   (c)   Write the applications of aluminum and its alloys.
   (d)   Define the concept of magnetism.
   (e)   Write is Superconductivity?
   (f)   What are the different types of lattices?
   (g)   Explain atomic mass and atomic number.
   (h)   What is phase in metals?
   (i)   What is the importance of alloy in engineering
   (j)   What do you mean by atomic model?

SECTION – B

2.   **Attempt any five of the following questions:**   **5 x 10 = 50**
   (a)   Describe the various polymerization techniques. What are the importance of Bulk and Interfacial Polymerization?
   (b)   Explain the following :
          (i)   Quenching
          (ii)   Passion ratio
          (iii)   Plastic deformation
   (c)   Explain various types of carbon steels with their properties.
   (d)   Describe the investment casting process also discuss its merit and demerit and limitation.
   (e)   Enlist the various cold and hot working processes. Compare hot working and cold working process. Also write advantage and disadvantage of each.
   (f)   List the different types of defects in solids. Explain them with neat sketch.
   (g)   What is facture? Explain the causes of fracture in metal?
   (h)   Compare the properties of crystalline ceramics and glass ceramics.

SECTION – C

Attempt any two of the following questions: **2 x 15 = 30**
   3   What are the Smart materials? Describe optical fiber and its applications with suitable examples.
   4   With the help of a neat diagram explain the working principle of cupola also write its limitations.
   5   Explain the terms pattern and Pattern allowances. What are the different types of allowance provided when making a pattern? Explain each in brief.