

**B.TECH.**

**THEORY EXAMINATION (SEM-IV) 2016-17**  
**MATERIAL SCIENCE**

**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 fracture? 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.