R09

Code: 9A03301

B.Tech II Year I Semester (R09) Supplementary Examinations December 2015
MATERIALS SCIENCE & ENGINEERING
(Common to AE, ME & MCT)

Time: 3 hours   Max. Marks: 70

Answer any FIVE questions
All questions carry equal marks
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1   Define atomic packing factor and show that the ratio of height of the hexagonal prism to the side of the hexagonal face for HCP unit cell is 1.633.

2 (a) Explain the relative valence factor to form the substitutional solid solution.
   (b) Explain the difference between interstitial solid solution and interstitial compounds.

3   Draw and explain the Ni-Cu phase diagram and explain the solidification of 60Ni-40 Cu alloy.

4 (a) Distinguish between white cast iron and malleable cast iron.
   (b) Discuss the Hadfield manganese steels.

5   Explain the following:
   (a) Cyaniding.
   (b) Carburizing.

6   Why two phase titanium alloys are stronger than the single phase alpha alloys? Explain.

7   Discuss various applications of ceramic materials in detail.

8   Explain glass fiber – reinforced polymer composites (G.F.R.P) in detail.

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