Code: 9A03301

R09

II B. Tech I Semester (R09) Supplementary Examinations, May 2012
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   (a)   Explain briefly the ionic and covalent bonds with examples.
    (b)   Define the atomic packing factor and find the APF for simple cubic unit cell.

2   (a)   What are the impurities in iron and explain the effect of each?
    (b)   What is a compound and explain the inter metallic compounds?

3   (a)   What is an equilibrium diagram and explain the importance of it?
    (b)   Explain the steps involved in the construction of binary equilibrium diagram using cooling curves.

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

5   Define heat treatment. Explain full annealing process.

6   Write the properties of copper and explain why copper is a suitable material for automobile radiators.

7   Describe the nature of bending of atoms in ceramic materials and discus the main features of the ceramic crystal structure.

8   Explain Polymer-Matrix Composites (P.M.C).

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