

Code: R7210306**B.Tech II Year I Semester (R07) Supplementary Examinations December 2015****METALLURGY & MATERIAL SCIENCE****(Mechanical Engineering)****(For 2008 Regular admitted batch only)**

Time: 3 hours

Max. Marks: 80

Answer any FIVE questions
All questions carry equal marks

- 1 Write short note on:
 - (a) Nucleation and growth.
 - (b) Micro segregation and macro segregation.
 - (c) Homogeneous and heterogeneous nucleation.
 - (d) Directional solidification.
- 2
 - (a) What are intermediate phases? Discuss various types of intermediate phases.
 - (b) What is the importance of ratio of radius of interstitial to solvent atom in interstitial compounds?
- 3 Distinguish between:
 - (a) Eutectoid and peritectic reactions.
 - (b) Coring and allotropy.
- 4
 - (a) What is the effect of cooling rate on cast iron? Explain.
 - (b) How white cast iron are produced?
 - (c) Explain the microstructure of malleable cast iron and its importance.
- 5 Discuss the effect of alloying elements on T – T – T diagram and on eutectoid.
- 6
 - (a) What are naturally occurring ceramics? Give examples and explain.
 - (b) Explain the structure and properties of glass ceramic materials.
- 7 What are cermets? Where are they used? Discuss.
- 8
 - (a) Explain in detail metal matrix composites, their physical and mechanical properties. Mention their applications.
 - (b) Write briefly on metal ceramic mixtures.
