

Code: 9A03301

R09

B. Tech II Year I Semester (R09) Supplementary Examinations, May 2013

MATERIAL SCIENCE & ENGINEERING

(Common to AE, ME and MCT)

Time: 3 hours

Max. Marks: 70

Answer any FIVE questions
All questions carry equal marks

- 1 (a) Describe the reasons for high thermal and electrical conductivity in metallic bonded solids.
(b) Explain the comparison method of estimating the grain size.
- 2 (a) What is an alloy system and explain the alloying systems?
(b) What is a compound and explain the interstitial compounds?
- 3 (a) Classify and explain transformations in the solid state.
(b) What is incongruent melting intermediate phase and draw the phase diagram illustrating it?
- 4 (a) Explain how alloying elements that dissolve in ferrite increases its strength.
(b) Explain the difference in microstructure and properties of white and gray castiron.
- 5 Explain the following:
(a) Flame hardening.
(b) Induction hardening.
- 6 What is a brass? Explain red brasses.
- 7 What is ceramic? Explain crystalline ceramics.
- 8 Define composite and explain matrix phase & dispersed phase.
