

R09

Code: 9A03301

B.Tech II Year I Semester (R09) Supplementary Examinations June 2017

MATERIALS SCIENCE & ENGINEERING

(Common to AE, ME & MCT)

Time: 3 hours

Max. Marks: 70

Answer any FIVE questions

All questions carry equal marks

- 1 (a) What is unit cell? Calculate and explain the number of atoms in the unit cells of BCC and FCC structures.
(b) Tantalum at 20°C is BCC and has an atomic radius of 0.143. Calculate its lattice parameter.
- 2 (a) Explain the ordered and disordered solid solutions.
(b) What is congruent melting phase and draw the cooling curve for the solidification of liquid antimony.
- 3 What is peritectoid reaction? Draw the phase diagram showing the formation of terminal solid solution.
- 4 (a) Explain the graphitisation in the malleable cast iron.
(b) Explain the different types of commonly employed tool and die steels.
- 5 What is hardenability? Explain Jominy end quench test.
- 6 Explain crystal structure and co-ordination number of copper with any two general properties.
- 7 Give the properties and applications of refractory materials.
- 8 Write the difference in strengthening mechanism between large particle & dispersion-strengthened particle reinforced composites.
