H.T NO.										

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Code No:A10311

MLR INSTITUTE OF TECHNOLOGY

(An Autonomous Institution)

II B.Tech I Sem Supplementery Examination, January-2017

METALLURGY AND MATERIAL SCIENCE

(MECH)

Note: 1. This question paper contains two parts A and B.
2. Part A is compulsory which carries 25 marks. Answer all Questions in Part A.
3. Part B consists of 5 units. Answer any one full question from each unit. Each Question Carries 10 marks and a, b, c as sub questions.

PART –A

1. a) Define crystal? 2M
   b) What is the necessity of alloying? 2M
   c) Briefly explain about BCC. 2M
   d) What is a Solid solution? 2M
   e) What is a Phase? 2M

2. a) Explain the Allotropic forms of Iron? 3M
   b) What arte plain carbon steels? 3M
   c) What is Hardenability? 3M
   d) What is Crystallisation? 3M
   e) What are Matrix and reinforcement materials? 3M

PART – B

3. Describe the structure of a grain boundry? What are the effects of grain boundries on the properties of metal? 10M

(OR)

4. What are the types of Solid solutions? Explain. 10M

5. Explain the Binary Isomorphous alloy Phase diagram? Write the conditions favourable for formation of Binary Isomorphous alloy? 10M

(OR)

6.Explain the Fe-Fe_3C (Iron –Iron carbide) phase diagram with a neat sketch. 10M

7.What are the types of Cast Irons? Write the properties and applications of any two types? 10M

(OR)

8. Explain the following.
   a) Full Annealing. 4M
   b) Normalizing. 3M
   c) Hardening. 3M

9.Explain the properties and applications of Aluminium alloys. 10M

(OR)

10. What are the various types of Glasses? Write the properties and applications of them? 10M

11. Explain the following.
   a) Particle –reinforced materials 5M
   b) Fiber- reinforced materials 5M

(OR)

12. a) Explain the continuous –Fiber reinforced Metal Matrix composites. 5M
   b) Explain the Discontinuous Fiber reinforced Metal Matrx composites. 5M