H.T NO.										

MLR15

Code No: A10311

MLR INSTITUTE OF TECHNOLOGY

(An Autonomous Institution)

II B.Tech I Sem Regular Examinations- December-2016

METALLURGY AND MATERIAL SCIENCE

(MECH)

Time: 3 hours Max.Marks :75

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 may have a,b,c as sub questions.

PART-A

1) a. What are the different types of solid solutions? [2M]
b. Explain phase rule? [2M]
c. Give the list of any four properties of white cast irons? [2M]
d. What are the advantages of titanium and its alloys? [2M]
e. Explain in brief the classification of composites? [2M]

2) a. Explain Hall-petch equation? [3M]
b. Write a note on construction of equilibrium diagram? [3M]
c. Explain the effect of alloying elements of Fe-Fe_3C diagram? [3M]
d. Write a note on applications of ceramic materials? [3M]
e. What are the advantages and disadvantages of composites materials? [3M]

PART-B

3) a. Explain with neat sketches the various crystal systems? [5M]
b. Explain the effect of grain boundaries on the properties of materials? [5M]

OR

4) a. Explain in detail Hume Rotherys rules? [5M]
b. Write a brief note on various advantages and disadvantages of alloying? [5M]

5) Explain with relevant neat sketch the isomorphous phase diagram? [10M]

OR

6) With a neat sketch the eutectic phase diagram? [10M]

7) Discuss in brief white, malleable and grey cast iron? [10M]

OR

8) Explain in detail the various alloy steels, tool and die steels? [10M]

9) Explain in detail copper and aluminium non-ferrous materials? [10M]

OR

10) Discuss in detail nano materials? [10M]

11) Explain in detail MMC and CMC? [10M]

OR

12) Write a note on composite materials? [10M]