



BE (Full Time) DEGREE END SEMESTER EXAMINATION – Nov 2013

MANUFACTURING ENGINEERING BRANCH

THIRD SEMESTER

ML8351 ENGINEERING MATERIALS AND METALLURGY

Time: 3 hr

Max. Marks: 100

Answer ALL Questions

PART – A (10 x 2 = 20 Marks)

1. What are the factors that affect the formation of substitution solid solution?
2. Write down the commonly occurring binary alloy types.
3. What is Continuous transformation diagram?
4. How martensite is formed?
5. What is Critical cooling rate?
6. What is the influence of addition of Ni , Cr on steel?
7. State few applications of thermoplastics.
8. What is PET,PEEK ?
9. What is slip system?
10. Draw S- N curve of steel and Aluminum.

PART – B (16 x 5 = 80 Marks)

11. a) Explain the procedure of constructing binary phase diagram with an example. (8)
b) Describe how carbon solubility affects the Iron – carbon alloy formation. (8)
12. a) i) Explain the cooling curve super imposed IT diagram of an eutectoid steel. (8)
ii) Write about spheroidized annealing and austempering. (8)
(Or)
b) i) Describe Jominy end quench test . (8)
ii) Discuss about Gas Carburizing with a neat sketch. (8)
13. a) i) Discuss the different types of stainless steel and its application. (8)
ii) Write about the different types of Cast Iron. (8)
(Or)
b) i) List the different types of copper alloy and its application. (8)
ii) Classify Aluminum alloys. (8)
14. a) Describe the properties and application of engineering ceramics. (16)
(Or)
b) Discuss the different types of composite materials. (16)
15. a) i) Explain the mechanism of plastic deformation by dislocation movement. (8)
ii) Discuss about creep. (8)
(Or)
b) i) Describe Rockwell hardness testing procedure. (8)
ii) Write short notes on fracture and fatigue. (8)