Roll No.								

B.E.(FULL-TIME) DEGREE END SEMESTER EXAMINATIONS, APRIL/MAY 2011
MATERIALS SCIENCE AND ENGINEERING
THIRD SEMESTER (REGULATIONS 2004)

16

ML 271 – MATERIALS STRUCTURE AND PROPERTIES

Time : 3 Hours **Answer ALL Questions** Max. Marks : 100

PART – A (10 X 2 = 20 Marks)

1. Why modulus of elasticity is considered as a structure insensitive property?
2. Define Lattice parameter?
3. Why do we prefer alloys than pure metals in the structural applications?
4. Define Eutectic reaction. Give example.
5. What is age hardening?
6. What do you understand by the term Thermal stress?
7. What is the significance of aspect ratio in composites?
8. What do you understand by tempered glass?
9. Define the term Degree of polymerization.
10. Mention any two examples of conducting polymers.

PART – B (5 X 16 = 80 Marks)

11. i)Write a brief note on the following Crystallography. **(8)**
ii) Determine the relationship between atomic radius and lattice parameter in SC, BCC and FCC structure. Also calculate the packing factor. **(8)**

12.a) Describe the mechanism involved in plastic deformation.

(OR)

b) i) What do you understand by solid solution? Discuss the conditions for unlimited solid solubility? **(8)**
ii) Differentiate Eutectic and Eutectoid reactions. **(8)**

13. a) i) Discuss briefly the classification of steels. **(8)**
ii) Draw Iron-Carbon equilibrium diagram. What do A_1, A_3 and A_{cm} temperatures refers to? **(8)**

(OR)

b) i) Discuss the various factors affecting the conductivity of a metal. **(8)**
ii) Write a brief note on Thermal shock. **(8)**

14. a) Compare silicon cand glass ceramics.

(OR)

b) i) Explain the features of fiber reinforced composites. **(12)**
ii) Discuss the applications of Cermets. **(4)**

15. a) Discuss briefly about the classifications of polymers.

(OR)

b) Write a brief note on the following i) Liquid crystal polymers and
ii) Photonic polymers.