

Reg. No :

Name :

MODEL QUESTION PAPER
Eighth Semester B.Tech. Degree Examination
(2013 Scheme)

13.806.3: MATERIAL SCIENCE (H)

Time : 3 Hours

Max. Marks: 100

Instruction : Write all questions in Part A and One full question from each Module in Part B

PART A

(Answer all questions. Each question carries 2 marks)

1. Define:

- i. Space lattice
- ii. Unit cell
- iii. Lattice parameters

2. Make short note on characteristics of dislocations.

3. Define Hardenability? Hardenability equals 1

4. Explain the three stages of fatigue failure?

5. Define the property of hardness . Which hardness test is most acceptable by industry and why?

6. Explain the following:

(a) Engineering Stress, true stress

(b) Engineering Strain, true strain

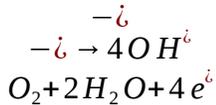
7. Explain Fillers and Plasticizers. Give two examples for each.

8. Differentiate between

a) Soda lime glass and fused silica glass

b) Vycor and Pyrex glass

9. Show how rust, $Fe(OH)_3$, can form in a Galvanic cell ,where Iron is the anode and Cathode reaction is as given:



10. Differentiate between : Polarization and Passivation.

(10x2=20)

PART B

(Answer any one full question from each module)

Module I

11. a) Explain Eutectic systems and Peritectic systems with phase diagrams

(15)

b) Define atomic packing factor and calculate the atomic packing factor of B.C.C crystal structure.

(5)

OR

12. a) Explain each heat treatment methods of metals.

(15)

b) Differentiate between Eutectic system and eutectoid system with examples.

(5)

Module II

13. a) A sodium chloride crystal is brittle when tested in air but becomes ductile when tested under water. Give the reason.

(8)

b) Differentiate between diamagnetism and paramagnetism with the help of sketches.

(12)

OR

14. a) Discuss the influence of temperature, impurities and plastic deformations on the resistivity of a metal. (8)

b) The Young's modulus of Carbon Steel decreases with temperature .Give the reason. (12)

Module III

15.a) Explain the process of cross linking and chain stiffening in polymers. (15)

b) Write short note on Ceramic matrix composites. (5)

OR

16. a) Explain the mechanism of Polymerisation with a suitable example. (10)

b) Classification of Composite materials. (10)

Module IV

17. Explain types of corrosion, mechanism and factors influencing corrosion-corrosion prevention (20)

OR

18. a) Illustrate the function of Inhibitors and list out their applications (12)

b) Make short note on factors affecting the selection of suitable materials for construction in chemical industry. (8)