

24049

B.Tech. 3rd Semester (Mechanical Engg. Branch-VII)

Examination, December-2013

MATERIAL SCIENCE

Paper²-ME-207-F

Time allowed : 3 hours]

[Maximum marks : 100

Note : Attempt any five questions from eight questions.

1. (a) Explain the point defects and line defects in brief. 10
- (b) Describe the edge and screw dislocations in detail. 10
2. What do you understand by Phase diagram Explain with neat sketches the TTT Diagram. 20
3. Explain the principles, classification, purpose of heat treatment processes in brief with neat sketches. 20
4. (a) Describe the crystal planes and crystal directions. 10
- (b) What is meant by fatigue, also write its characteristics ? 10
5. (a) Define the creep and what is the mechanism of creep with neat sketch ? 10

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(b) Explain properties of ceramic and mechanical behavior of ceramic. 10

6. Explain the following

(i) stress relieving

(ii) hardening

(iii) tempering

(iv) carburizing

(v) nitriding. 20

7. (a) Describe the surface defects in detail. 10

(b) Explain the Corrosion and its mechanism and effect. 10

8. Write short notes on the following : 20

(a) Gibbs's phase

(b) Induction hardening

(c) Pearlite

(d) Fracture.