

Roll No.
Printed Pages : 2

8424

BT-4 / M-17

MATERIALSCIENCE

Paper-ME-204 E Opt. I

Time allowed : 3 hours]

[Maximum marks : 100

Note : Attempt any five questions, selecting one question from each unit.

Unit-I

1. (a) Explain briefly crystal structure and crystallographic plane. 14
(b) Describe how atoms are arranged in cubic crystal. 6
2. (a) Define slip and twinning. Also differentiate them. 10
(b) Define dislocation and their type. Why one of them is known as screw dislocation? 10

Unit-II

3. (a) Explain in detail TTT diagram for steel. 14
(b) Explain Gibb's phase rule. 6
4. (a) Define heat treatment and list the various stages of heat treatment procedure. 12
(b) Explain briefly the applications of Stress Relieving. 8

Unit-III

5. Write short note on : 20
 - (i) Recovery
 - (ii) Recrystallization
 - (iii) Grain Growth
 - (iv) Work hardening.

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(2)

6. (a) Explain various factors affecting fatigue. Also explain the process of fracture in brittle metal. 10
(b) Explain mechanism of plastic deformation in metals. 10

Unit-IV

7. (a) Explain corrosion and various method of prevention of corrosion. 10
(b) Draw a typical 'Creep Test Curve' how this information is helpful for the design engineer. 10
8. (a) Define polymer, how does a copolymer differ from normal polymer. 10
(b) Explain various important properties of ceramics. 10

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