

Roll No.

24049

**B. Tech. 3rd Semester (MAE)
Examination – December, 2018**

MATERIAL SCIENCE

Paper : ME-207-F

Time : Three Hours]

[Maximum Marks : 100

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt *five* questions in all, selecting *one* question from each Section. Question No. 1 is *compulsory*. All questions carry equal marks.

1. (a) Space Lattice
- (b) Gibb's phase rule.
- (c) Season Cracking.
- (d) Properties of Ceramic. 5 × 4 = 20

SECTION – A

2. Discuss about :

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P. T. O.

- (a) Co-ordination number 10
- (b) Crystal lattice and directions. 10
- 3. (a) Describe edge and screw dislocations in detail. 10
- (b) Explain surface defects in detail. 10

SECTION – B

- 4. (a) Write about importance and objectives of phase diagram. 10
- (b) Explain iron carbon equilibrium diagram with neat sketch. 10
- 5. Explain the principles, classifications, purpose of heat treatment processes in brief, with neat sketches. 20

SECTION – C

- 6. (a) Describe the concept of re-crystallization and grain growth. 10
- (b) Explain in detail yield point phenomena with neat sketch. 10
- 7. Write about :
 - (a) Fracture process and analysis in metals. 10
 - (b) Mechanism of fatigue. 10

SECTION – D

- 8. Explain in detail mechanism of creep. Also write about impact of time and temperature on creep. 20
- 9. Write short notes on :
 - (a) Types of ceramics 10
 - (b) Formation of polymers. 10