

Roll No.

24049

**B. Tech 3rd Semester (MAE)
Examination – December, 2017**

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. Question No. 1 is *compulsory*. Attempt *one* question from each Section.

1. Explain following : 4 × 5 = 20
- (a) Co-ordination number
 - (b) Properties of ferrite
 - (c) Objectives of phase diagram
 - (d) Factors affecting fatigue
 - (e) Properties of ceramics

SECTION – A

2. (a) Find atomic packing factor for BCC structure. 8

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- (b) What are common surface defects in metal crystal? State their remedies also. 12
3. (a) What is crystal direction, explain it with five different neat sketches? Also explain its properties. 12
- (b) Describe effects of imperfection on metal properties. 8

SECTION - B

4. (a) With neat sketch explain binary phase diagram of Cu-Ni. 12
- (b) What do you mean by stress relieving? Explain how this process is carried out. 8
5. (a) With neat sketch explain austempering and its properties. 8
- (b) With suitable chemical reaction explain two ways in which carburizing is performed. 12

SECTION - C

6. (a) Explain the mechanism of recovery and re-crystallization. 10
- (b) With suitable example, explain what is fatigue failure? Explain its characteristics. 10
7. (a) Describe different methods which cause failure of a material. 10
- (b) Discuss about yield point phenomenon and baushinger effect. 10

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SECTION - D

8. (a) What is creep? Explain creep curve with neat sketch. 10
- (b) State two different techniques of forming ceramics. 10
9. (a) Explain corrosion mechanism with suitable chemical reaction. 10
- (b) Draw polymer structure. Explain its different types. 10

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