

**24049**

**B. Tech. 3rd Semester (ME) F-Scheme Examination,**

**December-2014**

**MATERIAL SCIENCE**

**Paper-ME-207-F**

*Time allowed : 3 hours]*

*[Maximum marks : 100*

*Note : Attempt any five 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 Iron-carbon equilibrium diagram. 20
3. Explain the principles, classification, purpose of heat treatment processes in brief with neat sketches. 20
4. (a) Describe the mechanism of plastic deformation. 10
- (b) What is meant by fatigue, also write its characteristics ? 10
5. (a) Define the creep and define the mechanism of creep with neat sketch. 10
- (b) Explain properties of ceramic and mechanical behaviour 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 formation of polymers. 10

8. Write short notes on the properties of following :

- |                 |    |
|-----------------|----|
| (a) Austenite   |    |
| (b) Ferrite     |    |
| (c) Pearlite    |    |
| (d) Martensite. | 20 |