

SE - sem - IV (CBSSGS) chemical - MSE 15/12/16
Material Science Engineering Q.P. Code : 573204

(3 Hours)

[Total Marks : 80]

- NB:** 1) Question No.1 is compulsory.
2) Attempt **any three** questions from remaining **five** questions.
3) Illustrate answers with neat sketches wherever required.
4) Assume **suitable** data wherever required and state them clearly.
1. (a) Explain what is ferromagnetism and antiferromagnetism. 05
(b) Define and explain Debroglie's wavelength. 05
(c) Explain opacity and translucency in insulators. 05
(d) What is creep? Explain what are creep curves. 05
2. (a) Explain edge dislocation and screw dislocation in detail with neat sketches. 10
(b) What is corrosion? Explain the mechanism and factors influencing corrosion in metals. 10
3. (a) Explain the phenomenon of superconductivity. Explain its types and applications in detail. 10
(b) Explain factors used for selecting materials for process equipment. 10
4. (a) Explain ductile fracture and brittle fracture of materials in detail. 10
(b) Explain mechanism of electrical conduction in solids by using energy band model of conductivity. 10
5. (a) Draw and explain in detail the iron-iron carbide phase diagram. Mention the different phases and explain the phase transformation reactions involved. 10
(b) Discuss the properties and application of ceramics. 10
6. (a) Explain in detail fiber reinforced composites with respect to : 10
(i) Matrix material
(ii) Fibers
(b) Explain different materials used for fabrication of equipment in chemical industries. 10
