

S. E. Mech. IV CBSGS

Q.P. Code: 013965

07.6.17

172

(3 Hours)

[Total Marks: 80]

- N. B. 1) Question No. 1 is compulsory  
 2) Attempt any Three Questions out of remaining Five Questions  
 3) Figures to right indicate Full Marks  
 4) Assume suitable data if necessary

- Q. 1. Write note on any four 5 X 4 = 20  
 a) Effect of Alloying Elements on Phase Transformation  
 b) Critical Resolved Shear Stress  
 c) Creep Test  
 d) What are Composites? Give Classification of Composites.  
 e) Importance of Iron as Engineering Material
- Q. 2 (a) Draw and Explain Isomorphous and Eutectoid Phase diagram. 08  
 Q. 2 (b) What is deformation? Explain the slip mode of deformation. 06  
 Q. 2 (c) Define Fatigue. Draw S - N curve and explain its interpretation. 06
- Q. 3 (a) Draw Iron and Iron Carbide ( $Fe - Fe_3C$ ) diagram and explain the phases existing in it. 12  
 Q. 3 (b) Explain Flame Hardening and Induction Hardening. 08
- Q. 4 (a) Draw and Explain construction of Time Temperature Transformation (TTT) diagram of 0.8% C alloy. 10  
 Q. 4 (b) Derive an expression for Griffith theory for Brittle Fracture. 10
- Q. 5 (a) Give classification of Stainless Steel. 05  
 Q. 5 (b) Differentiate in between Edge Dislocation and Screw Dislocation. 05  
 Q. 5 (c) What is Case Hardening? Explain Carburising in detail. 10
- Q. 6 Write short note on any four 5 X 4 = 20  
 (a) Types of Cast Iron  
 (b) Hardenability Test  
 (c) Austempering  
 (d) Methods used for Nanomaterials Synthesis  
 (e) Normalising