SE - ME - Sem-IV - Old - M.T. 12/02/2015

(OLD COURSE) **QP Code : 3993**

(3 Hours) **[Total Marks: 100]**

N.B: **(1) Question No. 1 is compulsory.**
(2) Attempt any FOUR questions from remaining six questions.
(3) Figures to the right indicate full marks.
(4) Illustrate the answer with neat sketches wherever required.
(5) Answers to questions should be grouped & written together.

1. (a) Draw Fe-Fe3C equilibrium diagram indicating all important temperatures. **10**
   (b) Explain the phenomenon of Strain Hardening and explain theories of strain hardening. **10**

2. (a) Define edge dislocation and screw dislocation. Illustrate your answer with neat sketches. **10**
   (b) Define the term "Hardenability". Discuss the factor affecting hardenability and explain any one of the hardenability tests. **10**

3. (a) State and explain slip mechanism of deformation. **10**
   (b) Distinguish between stress rupture test and creep test. **10**

4. (a) Define Fracture and give a brief classification of fracture. State Griffith's theory of brittle fracture and derive Griffith's equation. **10**
   (b) What is Carburizing? Explain advantage and disadvantages. **10**

5. (a) Define Fatigue failure. Give examples of components prone to fatigue failure. Discuss fatigue testing and explain SN curve for ferrous and non ferrous metals. **10**
   (b) Distinguish between gray cast iron and white cast iron. **10**
6. (a) Define Creep. Explain the mechanism of Creep Failure. **10**
   (b) Explain in detail the Heat Treatment for 18-4-1 Tool Steel. **10**

7. Write short notes on **(Any four)** **20**
   (a) Properties of eutectic alloys
   (b) Peritectic reaction
   (c) Sub-Zero Treatment
   (d) Differentiate between Annealing and Normalizing
   (e) Effect of alloying elements on steel

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