

(3Hours)

[Total Marks: 80]



- N.B. (1) Question no. 1 is compulsory  
(2) Answer any 3 questions out of remaining questions.  
(3) Assume a suitable data if necessary.

- Q.1. Write short notes on the following: 20  
(a) Classification of materials.  
(b) Carburizing.  
(c) Stainless Steels.  
(d) Strain hardening.
- Q.2. (a) What is heat treatment process? Explain hardening process in detail. 10  
(b) Draw Iron -Iron carbide phase diagram and explain various phase transformation reactions from different regions of the diagram. 10
- Q.3. (a) Explain the effect of alloying elements on ferrite, carbide and austenite. 10  
(b) Explain structural reaction injection moulding process in detail. 10
- Q.4. (a) Explain tools steels with their important compositions and their applications. 10  
(b) Define fracture and explain the phenomenon of brittle and ductile fracture. 10  
Also explain Ductile- to- Brittle transition.
- Q.5. (a) Explain Austempering and Martempering in detail 10  
(b) Classify plain carbon steels and cast irons. 10
- Q.6. Write Short notes on the following: 20  
(a) Smart materials.  
(b) Alloys of copper.  
(c) Recovery, Recrystallization and Grain Growth.  
(d) Bio-materials.
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