

- 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) Crystal Defects.
(b) Carburizing.
(c) Stainless Steels.
(d) Resin transfer molding.
- Q.2. (a) State and explain various types of ingot defects and suggest remedies for defects. 10
(b) Differentiate between edge and screw dislocations. 10
- Q.3. (a) Draw and label a TTT diagram for 0.8 % carbon steel superimpose various cooling curves on it and explain process. 10
(b) Draw Iron -Iron carbide phase diagram and explain various phase transformation reactions from different regions of the diagram. 10
- Q.4. (a) Explain the effect of alloying elements on ferrite, carbide and austenite. 10
(b) Explain the heat treatment process of Hardening and Tempering. 10
- Q.5. (a) Define creep and elaborate the method used for testing it. 10
(b) Define fracture and explain the phenomenon of brittle and ductile fracture. 10
Also explain Ductile- to- Brittle transition.
- Q.6. Write Short notes on the following: 20
(a) Smart materials.
(b) Alloys of Nickel.
(c) Recovery, Recrystallization and Grain Growth.
(d) Applications of Nano composites.
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