

(3 Hours)

Total Marks : 80]

- Note
- 1 All questions carry equal marks.
 - 2 Question number one is compulsory.
 - 3 Solve any three questions from remaining questions.
 - 4 Assume suitable data if necessary.

- Q.1 Write notes on (any four). 20
- a. Write a short note on stages of creep.
 - b. Write a short note on Types of Cast iron.
 - c. Write a short note on Martempering.
 - d. Effect of allowing elements on carbide formation.
 - e. Explain point defects of crystal imperfection.
- Q.2 10
- a. Write in detail Classification of engineering materials
 - b. Define fracture Explain brittle, ductile and fatigue fracture.
- Q.3 10
- a. Draw **Fe-Fe₃C** equilibrium diagram. Explain cooling of .9% C steel in **Fe-Fe₃C** equilibrium diagram.
 - b. What is case hardening? Discuss the process of Nitriding in detail. 10
- Q.4 10
- a. What is high speed steels? How are the heat treated? 10
 - b. What are the various methods used for processing of polymers? Explain any two in detail. 10
- Q.5 10
- a. Explain flame hardening and induction hardening. 10
 - b. Write a short note on effect of allowing elements on Eutectoid temperature and composition. 10
- Q.6 Write a short note on the following 20
- a. What are nano composite?
 - b. Allotropic nature of iron.
 - c. Engineering Materials.
 - d. Thermal fatigue of metal.
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