

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech. (Mechanical Engineering) (Sem-4)

MATERIALS ENGINEERING

Subject Code : BTME-404-18

M.Code : 77549

Date of Examination : 14-06-2023

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Write briefly :

- a) What do you mean by point defect?
- b) Define allotropy.
- c) Draw body centered cubic lattice.
- d) What is meant by recovery?
- e) Define eutectic reaction.
- f) What is lever rule in phase diagram?
- g) Define Annealing.
- h) What is critical cooling rate?
- i) What is flame hardening?
- j) Name different alloying elements of stainless steel.

SECTION-B

2. What is steady-state diffusion? Discuss important factors affecting diffusion.
3. Show that the atomic packing factor for Face Centered Cubic (FCC) crystal structure is 0.74.
4. Explain equilibrium diagram of binary system with example.
5. What do you mean by heat treatment of steel? Explain tempering process.
6. Discuss the effect of important alloying elements on properties of steel.

SECTION-C

7.
 - a) Explain edge and screw dislocations.
 - b) Explain Jominy end-quench test to determine harden ability of steel.
8. Draw Iron carbon (Fe-C) equilibrium diagram. Label all the phases and temperatures properly. Also describe the possible phase reactions.
9. **Write short note on any two of the following :**
 - a) Time temperature transformation (TTT) curves
 - b) Theories of plastic deformation
 - c) Nitriding and cyaniding

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

www.allsubjects4you.com