

Roll No.

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Total No. of Questions : 09

B.Tech (ME) (Sem.-3)

ENGINEERING MATERIALS AND METALLURGY

Subject Code : BTME-306

M.Code : 59116

Date of Examination : 15-12-2023

Max. Marks : 60

Time : 3 Hrs.

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 is twinning?
- b) Explain the concept of allotropy.
- c) What is the phase rule?
- d) What is meant by ductility?
- e) Explain creep.
- f) Draw a BCC unit cell and calculate the number of atoms in this cell.
- g) What is flame hardening?
- h) What is the use of tempering?
- i) What is High Speed Steel (HSS)?
- j) What is Austenite?

SECTION-B

2. Give a comparison between annealing and normalising.
3. Differentiate between edge dislocation and screw dislocation.
4. Differentiate between CCT and TTT diagram.
5. Write a note on induction hardening of steel.
6. What is peritectic transformation? Explain the various phases occurring in iron-carbon equilibrium diagram during peritectic transformation.

SECTION-C

7. Explain the various types of imperfections found in crystalline materials, in detail.
8. Discuss the role of Mn, Si, Ni and Cr addition in the alloy steels.
9. Write a note on :
 - (a) Nitriding and cyaniding
 - (b) Re-crystallisation.

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.