

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech. (Chemical Engg.) (Sem.-4)

**MATERIAL SCIENCE**

Subject Code : BTCH-404B

M.Code : 78134

Date of Examination : 11-07-22

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) Define space lattices?
- b) Discuss Ductility and tensile strength.
- c) Define fatigue. And on what factors fatigue depends?
- d) Explain solid state hardening process of strength.
- e) Define ultimate tensile strength.
- f) Define dielectric strength.
- g) Distinguish edge dislocation and screw dislocation.
- h) Give important properties and uses of Aluminum.
- i) Define ceramic.
- j) What is creeping? Explain creep curve.

### SECTION-B

2. Derive an expression for Young's modulus for ISO stress and strain conditions.
3. Differentiate between thermoplastic and thermosetting plastics.
4. Explain Austempering and Martempering with neat sketch.
5. Draw Fe-Fe<sub>3</sub>C diagram and indicate the phase temperatures and also write the invariant reactions.
6. Discuss composition, types and different properties of glass.

### SECTION-C

7. Discuss the FCC and HCC crystal structure system.
8. What are composite materials? What are the advantages, limitations and applications of composite materials?
9. Discuss the engineering usage of Nylon-66, Polyesters and PVC polymers.

**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.**