

Seat No.

OCT-NOV 2025 WINTER EXAMINATION**1154 B.Tech. CBCS****Sub. Name: Metallurgy****Sub. Code: 63353/73206/77737****Day and Date: Monday ,08-12-2025****Total Marks: 70****Time: 02:30 PM To 05:00 PM**

- Instructions:**
1. All questions are compulsory
 2. Draw neat labelled diagrams wherever necessary
 3. Figures to the right indicate full marks

- Q1) Solve any two [12]**
- a. What are Intermediate phases? What are the various types of Intermediate phases? Explain each in short. [6]
 - b. Draw the crystal structures of FCC and HCP and evaluate the number of atoms per unit Cell for both. [6]
 - c. What is coring and Dendritic structure? explain with neat sketches. [6]
- Q2) Solve the following [15]**
- a. Draw Iron - Iron Carbide(Fe-Fe₃C) Equilibrium diagram, along with all the reactions , phases, and temperatures. [8]
 - b. Solve any one [7]
 - i) Draw neat sketch of Al - Si equilibrium diagram . With reference to equilibrium diagram explain the modification treatment.
 - ii) classify plain carbon Steels write down properties and applications of plain Carbon Steel.
- Q3) Solve any two [8]**
- a. Explain with neat sketch eddy current testing. [4]
 - b. Write short note Impact Testing. [4]
 - c. Differentiate clearly between fatigue and creep testing. [4]
- Q4) Solve any two [12]**
- a. Give the classification of heat treatment furnaces. Explain any two types of furnaces with neat sketch. [6]

- b.** Draw CCT diagram overlap on TTT diagram and explain its significance. [6]
- c.** Explain Austenite to pearlite transformation with neat sketch. [6]
- Q5) Solve the following [15]**
- a.** What is annealing heat treatment ? Mention the purposes of annealing . [8]
Explain any two types of annealing in detail.
- b.** Solve any one [7]
i) What is flame hardening? and what are its advantages, limitations and applications.
ii) What is nitriding? what are the different types of nitriding? explain any one.
- Q6) Solve any two [8]**
- a.** Explain Mixing/ Blending process in powder metallurgy. [4]
- b.** Differentiate clearly between compacting and sintering. [4]
- c.** Write short note on methods of powder manufacturing. [4]

End Of Question Paper

Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -

This Question Paper may be distributed for following Subjects as common code.

सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

- 1] (101) Bachelor of Engineering (63353) Metallurgy Part 2 SEM 3
- 2] (101) Bachelor of Engineering (77737) Metallurgy Part 2 SEM 3
- 3] (1154) B.Tech. CBCS (73206) Metallurgy Part 2 SEM 3