Roll No: | | | | | | | | | | | |

GAIN MORE KNOWLEDGE
REACH GREATER HEIGHTS

PRESIDENCY UNIVERSITY

Presidency University Act, 2013 of the Karnataka Act No. 41 of 2013 | Established under Section 2(f) of UGC Act, 1956
Approved by AICTE, New Delhi | Approved By BCI
Bengaluru

Mid Term Examinations - October 2026

Date: 08/10/2026 **Time:** 11:45 AM - 01:15 PM

Course Code: MEC2020 **Course Name:** Material Science and Metallurgy

Semester: Third Semester **Max. Marks:** 50 **Weightage:** 50%

CO - Levels	CO1	CO2	CO3
Marks	42	24	24

PART A: Answer Following Questions. 10 M

Q.N.	Questions	M	CO	BT
1	Differentiate between interstitial and substitutional defect.	2	CO1	BT2
2	Define phase.	2	CO2	BT1
3	Classify the different types of phase diagram.	2	CO2	BT2
4	Define pearlite.	2	CO3	BT1
5	Mention the three invariant points in Fe-FeC phase diagram.	2	CO3	BT1

PARTB: Answer Any 1 Following Questions. 20 M

Q.N.	Questions	M	CO	BT
06.A	Discuss about ionic bonding with schematic sketches and examples.	10	CO1	BT2
06.B	Determine the atomic packing factor for BCC crystal structure with neat diagrams.	10	CO1	BT2
07.A	Describe about edge and screw dislocations with schematic sketches.	10	CO1	BT2
07.B	Determine the atomic packing factor for FCC crystal structure with neat diagrams.	10	CO1	BT2

PARTC: Answer Any 1 Following Questions. 20 M

Q.N.	Questions	M	CO	BT
08.A	Sketch binary isomorphous and binary eutectic phase diagram with suitable examples.	10	CO2	BT3
08.B	For a 99.6 wt% Fe – 0.40 wt% C at a temperature just below eutectoid, determine the composition of Fe_3C and ferrite (α) and the amount of Fe_3C in grams that forms per 100 g of steel.	10	CO3	BT3
09.A	Two metals A (melting point 800C) and B (melting point 600C) form a binary isomorphous system. An alloy having 35% B has 75% solid and rest liquid whereas an alloy having 55% B has 25% solid at 700C. Estimate the composition of solidus and liquidus at the above temperarure.	10	CO2	BT3
09.B	Sketch Iron-Iron carbide phase diagram and label all the phases, compositions, temperatures and invariant reactions.	10	CO3	BT3