Roll No.												

PRESIDENCY UNIVERSITY

BENGALURU

Mid - Term Examinations – October 2025

Date: 08-10-2025 **Time:** 02.00pm to 03.30pm

School: SOE	**Program:** B.Tech	
Course Code : MEC202O	**Course Name:** Material Science and Metallurgy	
Semester: III	**Max Marks**: 50	**Weightage**: 25%

CO - Levels	CO1	CO2	CO3	CO4	CO5	CO6
Marks	14	19	17	-	-	-

Instructions:

(i) Read all questions carefully and answer accordingly.

(ii) Do not write anything on the question paper other than roll number.

Part A

Answer ALL the Questions. Each question carries 2marks. 5Q x2M=10M

1	Differentiate between lattice and motif.	**2 Marks**	**L2**	**CO1**
2	What is interstitial defect?	**2 Marks**	**L1**	**CO1**
3	Define solubility limit	**2 Marks**	**L1**	**CO2**
4	List the types of phase diagram	**2 Marks**	**L1**	**CO2**
5	What is austenite?	**2 Marks**	**L2**	**CO3**

Part B

Answer the Questions. **Total Marks 40 M**

6.	**a.**	Describe the FCC crystal structure with schematic sketches.	**5 Marks**	**L2**	**CO1**
	b.	Explain the covalent bond and list its properties	**5 Marks**	**L2**	**CO1**
		Or			
7.	**a.**	Calculate the atomic packing factor of face centered cubic (FCC) crystal structure	**5 Marks**	**L2**	**CO1**
	b.	Explain the Fick's first law of diffusion with equations.	**5 Marks**	**L2**	**CO1**

8.	**a.**	Explain the various information drawn from phase diagram with an example	**7.5 Marks**	**L3**	**CO2**
	b.	Describe binary isomorphous phase diagram with neat sketches and examples	**7.5 Marks**	**L2**	**CO2**
		Or			
9.	**a.**	Describe binary eutectic phase diagram with neat sketches and examples	**7.5 Marks**	**L2**	**CO2**
	b.	Describe the allotropic transformation in Iron (Fe) with a neat diagram.	**7.5 Marks**	**L2**	**CO2**

10.	**a.**	Illustrate the microstructure development for a hypoeutectoid steel on cooling with neat sketches.	**7.5 Marks**	**L3**	**CO3**
	b.	Illustrate the microstructure development for a hypereutectoid steel on cooling with neat sketches.	**7.5 Marks**	**L3**	**CO3**
		Or			
11.	**a.**	Describe the pearlite and cementite phases with neat diagrams.	**7.5 Marks**	**L2**	**CO3**
	b.	Explain the eutectoid point in iron-iron carbide phase diagram and its associated microstructure on cooling	**7.5 Marks**	**L2**	**CO3**