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Department of Mechanical Engineering

CIE – I

Date	2nd April 2025	Maximum Marks	50 + 10
Course Code	ME242TB	Duration	120Min
Course Name	Material Science for Engineers	**USN:**	

Q. No.	PART A	M	BT	CO
1	According to which principle the electrons fill the lowest energy orbital first before moving to higher energy ones.	1	1	1
2	In _____ material the conduction and valence bands overlap so electrons can easily pass into the conduction band.	1	1	1
3	Define unit cell.	1	1	1
4	Write the classification of composites based on matrix.	2	1	1
5	The Burgers Vector is parallel to the dislocation line in which type of line defect.	1	1	1
6	If an atom is missing from its normal site in the matrix, the defect is called _____ defect.	1	1	2
7	Define thermal conductivity with equation.	2	2	2
8	In dielectric materials the movement of electrons in response to an external electric field is _____type of polarisation mechanism	1	1	2
	PART B			
1	With the help of neat sketches explain the Primary Interatomic bonds with examples.	10	2	1
2	Classify solid materials explain them briefly with examples	10	2	1
3	a) Calculate Atomic packing factor for FCC unit cell. b) Classify and explain different crystal imperfections	05 05	3 2	1
4	Compare the properties and applications of metals and polymers	10	3	1
5	a) Illustrate the following thermoelectric effects i) Seebeck effect ii) Peltier effect b) Discuss different types of Insulating materials highlighting their applications	05 05	3 2	2

BT-Blooms Taxonomy, CO-Course Outcomes, M-Marks

Marks Distribution	Particulars		CO1	CO2	CO3	CO4	L1	L2	L3	L4	L5	L6
	TEST	Marks	46	14	-	-	8	32	20	-	-	-

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