PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
B.TECH MIDSEM EXAMINATION
3rd SEMESTER
ACY-2022-23 (ODD SEM)

Subject Name (Code): Material Engineering (203109213)   **Branch:** Automobile/Mechanical
Date: 04-08-2022   **Time:** 2:30 PM to 4:00 PM   **Total Marks:** 40

Sr. No.		Marks
Q.1	(A) One line Questions: (1) Give the definition of a unit cell. (2) Give the full form of BCC. (3) What is advanced material? (4) Write the definition of polymorphism. (5) Define allotropy.	05

	(B) Compulsory Question:
	 (1) The ability of material to resist the scratch or penetrating load is known as _____.
	 (2) Atomic radius of FCC is _____.
	 (3) APF of Simple cubic is _____.
	   a. 0.90
	   b. 0.78
	   c. 0.54
	   d. 0.74
	 (4) The boundary line between (liquid) and (liquid+solid) regions must be part of _____.
	   a. Solvus
	   b. Solidus
	   c. Liquidus
	   d. Tie-line
	 (5) In a single-component condensed system, if degree of freedom is zero, maximum number of phases that can co-exist _____.
	   a. 0
	   b. 1
	   c. 2
	   d. 3
		05

Q.2	Attempt any four (Short Questions)	12
	(1) What is phase diagram?	
	(2) Explain any two mechanical properties.	
	(3) What is Metallography?	
	(4) Explain Substitutional Impurity & Interstitial Impurity of Crystal Imperfections.	
	(5) What are the criteria for the selection of engineering materials?	

Q.3	Attempt any two	08
	(1) Explain Lever rule.	
	(2) Write the steps of sample preparation, to reveal microstructure of the material in a microscope.	
	(3) Draw miller indices of [111] and [101].	
Q.4	(A) Define atomic packing factor. Calculate APF for Face centered cubic.	05
	(B) State and explain Gibb's Phase Rule.	05
	OR	
	(B) Define cooling curve. Also discuss for pure metal, binary alloy and binary eutectic alloy system.	05