

**PARUL UNIVERSITY**  
**FACULTY OF ENGINEERING & TECHNOLOGY**  
**B.Tech Mid Semester Exam**

Semester: 4<sup>th</sup>

Subject Code: 303113251

Subject Name: Engineering Materials and Metallurgy

Date: 29/01/2024

Time: (1hr: 30min)

Total Marks: 40

Sr. No.		Marks
Q.1	(A)	05
	<ol style="list-style-type: none"> <li>1. Define Metallurgy.</li> <li>2. What is the coordination number of SC, BCC, and FCC?</li> <li>3. Mention the definition of metal.</li> <li>4. Define Hardness.</li> <li>5. Which property is directly affected by atomic packing factor number?</li> </ol>	
	(B) Five Fill in the blanks	05
	<ol style="list-style-type: none"> <li>1. The properties of materials by which it can sustain the tension load without fracture is known as _____.</li> <li>2. The deformation of material under constant and continuous load is known as _____.</li> <li>3. The smallest part of the crystal structure by repetition of which the material is form is known as _____.</li> <li>4. In _____ the solute atoms replaces the solvent atoms.</li> <li>5. Line defect is known as _____ defects.</li> </ol>	
Q.2	Attempt any four (Short Questions)	12
	<ol style="list-style-type: none"> <li>(1) Give the classification of engineering materials.</li> <li>(2) Write down the selection criteria for engineering materials.</li> <li>(3) List the properties of materials that are generally observed</li> <li>(4) Define the following terms: Strength, Toughness, and resilience</li> <li>(5) Discuss about the types of solid solution.</li> </ol>	
Q.3	Attempt any two questions	08
	<ol style="list-style-type: none"> <li>(1) What is the requirement of engineering material?</li> <li>(2) Discuss about the types of point imperfection in detail.</li> <li>(3) Draw the plan for (1 2 1), (0 1 2) (-1 1 -2)</li> </ol>	
Q.4	(A) Draw the IRON-CARBON diagram in detail.	05
	(B) List out the types of crystal system along with values of $\alpha$ , $\beta$ and $\gamma$ .	05
	OR	
	(B) List out the microstructural defects. Explain its types.	05