



VIT[®]

Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

REG.NO.: 24BCM0206

SCHOOL OF CHEMICAL ENGINEERING
CONTINUOUS ASSESSMENT TEST -I
FALL SEMESTER 2024-2025

SLOT: B2+TB2

Programme Name & Branch : B.Tech (Chemical Engineering)
Course Code : BCHE 206L
Course Name : Materials Science and Engineering
Faculty Name(s) : Dr. K.Sivagami
Class Number(s) : VL2024250108356
Date of Examination : 26.8.24
Exam Duration : 90 minutes **Maximum Marks: 50**

General instruction(s):

Assume suitable data wherever required

Q. No	Question	Marks
1.	Differentiate between composites and alloys in engineering materials. Distinguish between particle reinforced and fibre reinforced composites with examples. Briefly explain how these composites helps in improving the efficiency of wind mills.	10
2.	List out the characteristics of primary and secondary bonds of different materials with its structure and properties.	10
3.	i) How many Fe atoms are there in 1 g of Fe? Atomic mass of Fe atom is 55.85 g/mol (5 marks) ii) Draw the following crystallographic planes in cubic unit cells: (i) (110) and (ii) (111). (5 Marks)	10
4.	Explain the arrangement of atoms in a body centred cubic unit cell. Determine coordination number, atomic radius and packing density of BCC crystal system.	10
5.	i) A cubic crystal plane has the following axial intercepts: $a = 1/3$, $b = -2/3$, $c = 1/2$. Find the Miller indices of this plane? (5 Marks) ii) Illustrate the various crystal imperfections with neat sketches (5 marks)	10