

**VIT**Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)**SCHOOL OF ADVANCED SCIENCES
CONTINUOUS ASSESSMENT TEST - I
WINTER SEMESTER 2025-2026****SLOT: B1**

Programme Name & Branch :B. Tech Chemical Engineering
Course Code and Course Name :BAPHY104 Physics of Materials
Faculty Name(s) : Dr. Anusha P T
Class Number(s) : 3650
Date of Examination :28.01.2026
Exam Duration : 90 minutes

Maximum Marks: 50**General instruction(s):**

- Answer All Questions
- M - Max mark; CO - Course Outcome; BL - Blooms Taxonomy Level (1 - Remember, 2 - Understand, 3 - Apply, 4 - Analyse, 5 - Evaluate, 6 - Create)
- Course Outcomes
CO1-Classify various types of crystal systems

Q. No	Question	M	CO	BL
1.	Describe point defects in crystalline solids. Explain Schottky and Frenkel defects with suitable diagrams and discuss their effect.	10	CO1	BL2
2.	What are the physical significance of reciprocal lattice vectors? A crystal has a cubic lattice with lattice parameter a . A plane in the crystal cuts the axes at $x=a/2$, $y=-a$ and is parallel to z axis. Determine the miller indices.	10	CO1	BL3
3.	a) Discuss the role of Bravais lattices. Explain the crystal structure of a face-centred cubic (FCC) lattice with example b) Parallel planes in a crystal have the same Miller indices'. Why?	5	CO1	BL2
4.	a) Obtain Bragg's condition for intensity peaks. Explain how interplanar spacing of crystal planes can be determined? b) A metal with body centered (BCC) structure show the first diffraction peak at a Bragg angle of $\theta = 30^\circ$ for the plane [110]. The wave length of X ray used is 2.1 Angstrom. Find the volume of primitive cell of the metal? Given Bragg's law $2d\sin\theta = n\lambda$.	5	CO1	BL3
5.	Discuss secondary bonding in solids. Explain hydrogen bonding and van der Waals forces, their origin, characteristics, and importance in molecular solids.	10	CO1	BL2
