D6BPH2205 **Reg. No.....**

Name: .....

SIXTH SEMESTER B.Sc. DEGREE EXAMINATION, APRIL 2025
(Regular/Improvement/Supplementary)
PHYSICS
GPHY6E03T: MATERIALS SCIENCE

Time: 2 Hours **Maximum Marks: 60**

SECTION A: Answer the following questions. Each carries *two* marks.
(Ceiling 20 marks)

1. Distinguish between thermoplastic and thermosetting polymers.
2. Compare vacancy diffusion and interstitial diffusion.
3. What are twin boundaries?
4. Give an account on the magnification of SEM.
5. Discuss Van der Waals bonding.
6. Discuss the factors that influence diffusion.
7. What do you mean by smart materials?
8. Differentiate between crystalline and non-crystalline states.
9. Describe atomic packing factors of FCC.
10. What are optical fibres? Give the features.
11. Briefly explain biomaterials.
12. What are point defects?

SECTION B: Answer the following questions. Each carries *five* marks.
(Ceiling 30 marks)

13. Discuss the stress-strain behavior of ceramics.
14. With necessary diagrams compare Frenkel and Schottky defects.
15. Discuss scanning electron microscopy technique.
16. Explain structure of diamond.
17. Discuss different diffusion mechanisms in solids.
18. Differentiate between covalent bonding and ionic bonding.
19. Explain hydrogen bonding.

SECTION C: Answer any *one* question. The question carries *ten* marks.

20. Discuss linear, branched and cross – linked polymers.
21. Explain the X-Ray Diffraction techniques for analyzing crystals.

(1 × 10 = 10 Marks)