D6BPH2305 **Reg. No.....**

Name: .....

SIXTH SEMESTER B.Sc. DEGREE EXAMINATION, APRIL 2026
(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. What is bond energy?
2. Sate the Fick's first law of diffusion.
3. Differentiate between crystalline and non-crystalline states.
4. What are polymers?
5. What are the features of abrasives?
6. Distinguish between polar and non-polar molecules.
7. What are optical fibres? Give the features.
8. How glass ceramics are synthesized?
9. What is polymorphism?
10. What are linear polymers?
11. Briefly explain biomaterials.
12. Discuss the temperature dependance of diffusion.

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

13. Elaborate on covalent bonding with suitable example.
14. Explain scanning electron microscopy.
15. Explain the face centered cubic crystal structure. What is the coordination number of FCC structure?
16. Distinguish between thermoplastics and thermosets.
17. Explain hydrogen bonding.
18. With suitable diagram differentiate between branched polymers and cross linked polymers.
19. Discuss stress-strain behaviour of ceramics.

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

20. Explain the X-Ray Diffraction techniques.
21. Describe the classification of imperfections in crystals.

(1× 10 = 10 Marks)