D6BPH2105 14 Reg.No.....

Name: .....

SIXTH SEMESTER B.Sc. DEGREE EXAMINATION, APRIL 2024

(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 are nano engineered materials?
2. Give the properties of ionic materials.
3. What is interdiffusion?
4. What is linear density of a crystal?
5. Explain screw dislocation and Burger's vector.
6. What are composite materials?
7. Briefly explain the properties of refractory ceramics.
8. Explain the method to find out grain size.
9. What are secondary electrons?
10. Explain Fick's law.
11. What are piezoelectric ceramics?
12. What are the properties of IC interconnects?

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

13. Find the Atomic Packing factor of BCC and FCC unit cell.
14. Distinguish between Frenkel and Schottky defect in solids.
15. Explain Bragg's Law of X-ray diffraction. Write a brief note on Laue method of X-ray diffraction.
16. Explain Plastic deformation in non-crystalline ceramics.
17. Describe about different forms of Carbon.
18. Explain the linear defects in solids.
19. Distinguish between thermoplastics and thermosetting plastics.

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

20. Discuss the working of Scanning Electron microscope and Transmission Electron Microscope.
21. Explain the formation of Van der Waals bonding in solids. Also explain Hydrogen bonding in Water.

(1 x 10 = 10 Marks)