

MAY 2011

P/ID 40015/PPHR

Time : Three hours

Maximum : 100 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

All questions carry equal marks.

1. Write a short note on sialon.
2. What is sintering?
3. What is polymer matrix composites? Give an example.
4. What is syntactic form? Name any one application.
5. Explain polarization.
6. What is pyroelectric materials?
7. Write a note on nucleation.
8. What is doping in semiconductor?
9. What is the origin of atomic magnetic moments?
10. Write a note on garnets.

PART B — (5 × 6 = 30 marks)

Answer ALL questions.

All questions carry equal marks.

11. (a) Write a note on commercial ceramics and its applications.

Or

- (b) Discuss the different types of composites materials.

12. (a) Write a note on thermoplastics and elastomers.

Or

- (b) Write a note on crystallization, melting and glass transition phenomena in polymers.

13. (a) Discuss the characteristics of piezoelectric materials with example.

Or

- (b) Describe the breakdown of dielectric materials with example.

14. (a) What is electronic-grade silicon? Write a note on impurity diffusion.

Or

- (b) Describe the ion implantation technique for IC fabrications.

15. (a) Illustrate the Hysteresis loop of typical Ferromagnetic material.

Or

- (b) Write a short note on :
- (i) magnetic domain
 - (ii) metglass.

PART C — (5 × 10 = 50 marks)

Answer ALL questions.

All questions carry equal marks.

16. (a) Describe forming and post-forming process of ceramics and discuss the mechanical properties of the ceramics.

Or

- (b) Describe the mechanical properties of fiber composites.

17. (a) Describe the different types of polymers based on their structures.

Or

- (b) Discuss the characteristics of the liquid crystal polymers with example.

18. (a) Describe mechanism of polarisation and discuss optical, molecular and interfacial polarisability.

Or

- (b) Write a note on ferroelectric materials and discuss their characteristics with example.

19. (a) Describe the photolithography and etching technique for IC fabrications.

Or

- (b) What is epitaxial growth? Describe epitaxial growth by chemical vapour deposition (CVD) method.

20. (a) Discuss the different types of magnetic materials based on their spins and discuss the applications of hard magnetic materials.

Or

- (b) Discuss different types of ferrites and their applications with suitable examples.
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