DECEMBER 2015 **P/ID 40015/PPHR**

Time : Three hours Maximum : 100 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. What are the different allotropes of carbon?

2. Draw the unit cell structure of NaCl.

3. What are the oxidation states of carbon and hydrogen in ethylene?

4. Define oligomer.

5. What is polarisabiliy?

6. Give two examples for pyroelectric materials.

7. Define unit cell and crystal.

8. What is the principle of ion implantation?

9. What is Ferrimagnetism?

10. What are magnetic domains?

PART B — (5 × 6 = 30 marks)

Answer ALL questions.

11. (a) Explain the properties and applications of silicon carbide ceramics.

Or

(b) Explain in detail the discontinuous fibre composites.

12. (a) Describe in detail the cellular plastics.

Or

(b) Explain in detail the thermoplastic and thermosetting polymers with examples.

13. (a) Discuss in detail the dielectric breakdown with example.

Or

(b) Derive Lorentz-Lorentz equation.

14. (a) Discuss in detail the purification of semiconductors with example.

Or

(b) Discuss metallisation process in IC fabrication.

15. (a) Discuss the types and properties of high carbon steel.

Or

(b) Explain ferrites and their applications.

PART C — (5 × 10 = 50 marks)

Answer ALL questions.

16. (a) Discuss in detail the classification of composites with examples.

Or

(b) Explain in detail the mechanical properties of ceramics.

17. (a) Explain in detail the mechanism of polymerisation and properties of polymers.

Or

(b) Discuss in detail the liquid crystal polymers.

18. (a) Discuss in detail piezoelectric effect and piezoelectric materials.

Or

(b) Explain the various applications of dielectric materials.

19. (a) Explain different steps involved in the fabrication of ICs.

Or

(b) Explain the crystal growth process by Chemical Vapour Deposition (CVD).

20. (a) Discuss in detail the soft and hard magnetic materials and their properties.

Or

(b) Discuss the structural and magnetic properties of barium ferrites.

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