15134

M.Sc. DEGREE EXAMINATION, NOVEMBER 2017.

FIRST SEMESTER

Material Science and Nanotechnology

Paper IV — POLYMERIC MATERIALS

Time : Three hours Maximum : 75 marks

(No additional sheet will be supplied)

SECTION A — (5 × 3 = 15 marks)

Answer any FIVE questions.

Each question carries 3 marks.

Each answer should not exceed 1 page.

1. Distinguish between monomer and polymer.

2. What is the use of random and alternate copolymers.

3. Discuss how the molecular weight is distributed in polymers.

4. Write the significance of Z- average molecular weights.

5. What are the factors that influence the glass transition temperature?

6. Discuss crystallization behaviour of polymer.

7. Write the nature of polymer molecules in solution.

8. Discuss the variation of viscosity in dilute polymer solutions.

SECTION B — (4 × 15 = 60 marks)

Answer ALL questions.

Each question carries 15 marks.

Each answer should not exceed 6 pages.

9. How the polymers are classified? Discuss addition and condensation polymerizations.

Or

10. Djscuss bulk, solution, suspension and emulsion in polymerization.

11. How molecular weight is distributed in polymers? Discuss the significance of molecular weight.

Or

12. What are the important parts in osmometry. How the molecular weight is determined using this technique?

13. How the glass transition temperature is determined and discuss the variation of glass transition temperature in blends and polymers?

Or

14. How the Maxwell and Voigt models explains the Visco-elasticity property of polymers.

15. Discuss in detail the thermodynamics of polymer dissolution.

Or

16. What are the out comes of Flory-Huggins theory explain in detail.

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