15134

M.Sc. DEGREE EXAMINATION, NOVEMBER 2016.

FIRST SEMESTER

Materials Science and Nano Technology

Paper IV — POLYMERIC MATERIALS

Time : Three hours Maximum : 75 marks

(No additional sheet will be supplied)

PART A — (5 × 3 = 15 marks)

Answer any FIVE questions.

Each question carries 3 marks.

Each answer should not exceed 1 page.

1. Write the classification of polymers.
2. Write about copolymers.
3. Write the significance of molecular weight.
4. Write about gradient elution.
5. Define glass transition temperature. How it is affected with impurities.
6. Discuss deformation behavior of polymers.
7. Discuss the process of dissolution.
8. Macromolecule in solution.

PART B — (4 × 15 = 60 marks)

Answer ALL questions.

Each question carries 15 marks.

Each answer should not exceed 6 pages.

9. (a) Describe the mechanism of condensation polymerization.

   (b) Discuss polymerization techniques.

Or

10. (a) What are blends discuss different types of blends.

    (b) Write about compatibilizer.

11. (a) Write about weight, viscosity and Z- average molecular weight.

(b) Discuss degree of polymerization.

Or

12. (a) Describe the membrane osmometry method in determination of molecular weight.

(b) Write about polymer fraction and fractional precipitation.

13. (a) Obtain the relation between t_g and t_m of blends and copolymers.

(b) Discuss polymer crystallization behavior.

Or

14. (a) Explain Hook's equation of polymer materials.

(b) Discuss Voigt models of visco-elasticity.

15. (a) Discuss the thermodynamics of polymer dissolution.

(b) Discuss Flory-Huggins theory of polymer solutions.

Or

16. (a) Write about size and shape of macromolecule in solution

(b) Discuss the viscosity change in polymer solutions.