

M.Sc. - II (Chemistry) (CBCS Pattern) Semester-III  
**PSCHT12.4 - Polymer Chemistry Paper-IV**

P. Pages : 2

Time : Three Hours



**GUG/W/24/11345**

Max. Marks : 80

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1. a) What are stereoregular polymers. Explain the tacticity in polymers. 8
- b) What are polymers. Give classification of polymers with suitable examples. 8

**OR**

- c) Write a note on condensation polymer. 4
- d) Describe branched and cross-linked polymer. 4
- e) Difference between thermoplastic and thermosetting polymers. 4
- f) Write a note on fibers & elastomers. 4
2. a) Discuss the following method for the determination of molar mass of polymer 8
- i) Asmometry
- ii) Light scattering
- b) Explain viscosity and mass average molecular weight determination in polymers. 8

**OR**

- c) Explain end group analysis method for molecular mass determination of polymer. 4
- d) Explain gel permeation chromatography for molecular mass determination. 4
- e) Discuss molecular weight distribution in polymers. 4
- f) Explain phenomenon of diffusion with respect to polymers. 4
3. a) Explain the term glass transition temperature. Discuss factor affecting on glass transition temperature. 8
- b) Explain the following terms. 8
- i) Strain induce morphology.
- ii) Chain topology.

**OR**

- c) Explain relationship between glass transition temperature and molecular weight. 4
- d) Explain the relation between  $T_g$  &  $T_b$ . 4
- e) What do you mean by configuration on polymer chain? 4
- f) Explain the morphology of crystalline polymers. 4
- 4. a) Give synthesis, properties and application of polyvinyl chloride. 8
- b) What are functional polymers. Explain fire retarding polymer in details? 8

**OR**

- c) Write synthesis and uses of nylon 6,6. 4
- d) Write a note on navolac resin. 4
- e) What is the difference between LDPE and HDPE? 4
- f) What is PET? Give its synthesis. 4
- 5. a) Define syndiotactic polymer. 2
- b) What is addition polymerization? 2
- c) Write down relation between  $M_n$  &  $M_w$ . 2
- d) Define ultracentrifuge. 2
- e) What is the glass transition temperature? 2
- f) Write any two uses of commercial polymer. 2
- g) What is crystallinity of polymers. 2
- h) Name the starting materials used in preparation of NYLON-6. 2

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