

M.Sc. (Chemistry) (C.B.C.S. and Old Pattern) Sem-III
PSCHT12.4 / MSc2334-4-Elective Paper-XII : Polymer Chemistry

P. Pages : 2

Time : Three Hours



GUG/W/19/11345

Max. Marks : 80

1. a) Classify the polymers on the basis of origin, mode of synthesis, and structure. **8**
b) What are stereoregular polymers give the classification of stereoregular polymers. **8**

OR

- c) Write short note on crossed linked polymerization. **4**
d) Write a note on condensation ordination polymer. **4**
e) Explain giving suitable example thermosetting and thermoplastic polymer. **4**
f) What are fibres and elastomer. **4**
2. a) Discuss the following methods for the determination of molar mass of polymer **8**
1) Osmometry
2) Light scattering.
b) Discuss briefly about molar mass of polymer. Explain how to calculate number average, mass average and viscosity average molecular mass of polymer. **8**

OR

- c) Explain end group analysis method for molecular mass determination of polymer. **4**
d) Write note on viscometric method for molecular weight determination. **4**
e) Explain gel permeation chromatography for molecular mass determination. **4**
f) Explain ultracentrifuge method for determination of molecular weight of polymer. **4**
3. a) Explain in detail morphology and crystallinity of polymer. **8**
b) Explain the effect of molecular weight, elements, chain topology and branching and cross linking on glass transition temperature. **8**

OR

- c) What is degree of crystallinity and give methods of purification of polymer. **4**
d) What is stain – induced morphology in polymer? **4**

- e) What do you mean by configuration of polymer chain? 4
- f) Explain the relation between T_g & T_t . 4
4. a) What is organic polymer? Give synthesis, properties and application of polyethylene and epoxy resins. 8
- b) Describe in detail conducting polymer. 8

OR

- c) Give any two methods of synthesis of polyvinyl chloride and polyester. 4
- d) Write synthesis and uses of Nylon 66. 4
- e) What are phenolic resins? Give it's synthesis and uses. 4
- f) Write short note on fire retarding polymer. 4
5. a) What are addition polymer? 2
- b) Write the structure of monomer of natural polymer. 2
- c) Define sedimentation. 2
- d) What is PDI? 2
- e) Define the term Glass transition temperature. 2
- f) How permeability is affected by crystallinity? 2
- g) What are commercial polymer? Give example of it. 2
- h) Give applications of polyester. 2
