M.Sc. (Chemistry) (CBCS Pattern) Sem-III

PSCHT12.4 - Elective Paper : Polymer Chemistry Paper-XII

P. Pages : 2 **GUG/W/22/11345**

Time : Three Hours * 3 8 0 5 * Max. Marks : 80

Notes : 1. All questions are compulsory having equal marks.
2. Write chemical reaction and draw diagram wherever necessary.

1. a) Define degree of polymerization. How will you classify the polymers on the basis of stereochemical arrangement. **8**

b) Give the details of addition and condensation polymers. **8**

OR

c) Explain Atactic polymers. **4**

d) Differentiate between Thermoplastic and elastomers. **4**

e) Explain ladder polymer with suitable example. **4**

f) Write note on natural polymer. **4**

2. a) Explain End-group analysis method for determination of molecular mass of polymers. **8**

b) Explain Osmometry method for determination of molecular mass of the polymer. **8**

OR

c) How the molecular mass of polymer is determined by viscosity method? **4**

d) Differentiate between mass average molecular weight and number average molecular weight. **4**

e) Explain Ultracentrifugation method for determination of molecular weight of the polymer. **4**

f) Explain phenomenon of diffusion with respect to polymers. **4**

3. a) Discuss morphology in polymers. **8**

b) Define glass transition temperature in polymer. Give one method to determine glass transition temperature. Explain the relation between T_g and T_t. **8**

OR

c) Discuss the effect of cross linking on T_g. **4**

d) Explain strain-induced morphology in polymers. **4**

e) Write note on order in crystalline polymers. **4**

f) Write a note on crystallization and melting of polymers. **4**

4. a) What are functional polymers? Explain fire retarding polymers in details. **8**

b) What are organic polymers? Give synthesis, properties and uses of polyamides. **8**

OR

c) Discuss synthesis, properties and uses of epoxy resins. **4**

d) Give synthesis of any two commercial polymers. **4**

e) Give synthesis of polyethylene. **4**

f) Describe the conducting polymers. **4**

5. a) What is branched polymerization? **2**

b) Explain stereoregularity in polymers. **2**

c) What is molecular mass distribution. **2**

d) Define term sedimentation. **2**

e) Give the effect of dilment on t_g. **2**

f) Give synthesis of polyvinyl chlorite. **2**

g) Define order in crystalline polymers. **2**

h) What are phenolic resins? **2**

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