

**CHT16 - Chemistry (Paper-IV) - Discipline Specific Elective - Chemistry-VIII :
Polymer Chemistry**

P. Pages : 2

Time : Three Hours



GUG/W/22/13344

Max. Marks : 50

- Notes :
1. All questions carry equal marks.
 2. Draw the structure if necessary.
 3. Diagrams and chemical equation should be given wherever necessary.
 4. Illustrate your answers wherever necessary with the help of neat sketches.
 5. Use of slide rule, Logarithmic Tables, Steam Tables, Mollier's Chart, Drawing Instruments, Thermodynamic tables for moist air, Psychometric Charts and Refrigeration charts is permitted. Non Programmable Electronic Calculator is allowed.
 6. Discuss the reaction, Mechanism wherever necessary.

1. a) Explain classification of polymers in details. 5
- b) Give the relationship between functionality and degree of polymerisation. 5

OR

- c) Discuss classification of polymerization process. 2½
- d) What are criteria for synthetic polymer formation? 2½
- e) Explain the texture of polymer. 2½
- f) Explain polyfunctional system. 2½
2. a) Discuss mechanism and kinetic of co-polymerization. 5
- b) Explain the term i) Plasticizer ii) Thermal stabilizer 5

OR

- c) What is antioxidant additives. 2½
- d) Discuss mechanism and kinetic of cationic polymerization. 2½
- e) Explain Antistatic agent and curing agent. 2½
- f) What are radical chain growth polymerization? 2½
3. a) How the molecular weight of polymer determine by end group analysis. 5
- b) Explain thermodynamics of polymer solution? 5

OR

- c) Explain Flory-Huggins theory. 2½

- d) Write a short notes on molecular weight distribution. 2½
- e) Explain osmotic pressure method for determination of molecular weight of polymer 2½
- f) What is lower and upper critical solution temperature? 2½
- 4. a) Give the preparation, Properties and application of polyvinyl chloride. 5
- b) Discuss the physical thermal and mechanical properties of polymer. 5

OR

- c) Write a short notes on acrylic polymer. 2½
- d) Give preparation and uses of polystyrene. 2½
- e) What are conducting polymer? 2½
- f) Give the preparation and uses of phenol formaldehyde. (Bakelite) 2½
- 5. Solve **any ten** **10**
- i) What is Ziegler-Natta polymerization?
- ii) Define term “Monomer”.
- iii) What is polymerization process?
- iv) What is Colorant?
- v) What is coordination polymerization.
- vi) What is ultraviolet stabilizers?
- vii) What is number average concept?
- viii) What is viscometry?
- ix) What is polymer solution?
- x) Draw structure of Polyethylene
- xi) Give two application of polyurethanes
- xii) Give any one preparation of polyvinyl acetate
