

NRT/KS/19/2193

Bachelor of Science (B.Sc.) Semester—VI Examination

ICH-604 : POLYMERS

Optional Paper—2

(Industrial Chemistry)

Time : Three Hours]

[Maximum Marks : 50

- N.B. :—** (1) All **FIVE** questions are compulsory and carry equal marks.
(2) Write chemical equations and draw diagrams wherever necessary.

1. (A) Write short notes on :
(i) Bulk polymerization and
(ii) Suspension polymerization. 5
(B) Explain mechanism of ionic polymerization. 5

OR

- (C) Explain the terms :
(i) Elastomers and
(ii) Fibres. 2½
(D) How are linear and branched polymers distinguished from each other ? 2½
(E) Explain termination and chain transfer steps in polymerization. 2½
(F) Describe coordination polymerization with suitable examples. 2½
2. (A) What are epoxy resins ? Give their methods of preparation with proper reactions. 5
(B) Explain End Group Analysis Method used for calculating the number-average molecular weight of polymer. 5

OR

- (C) Give the preparation of urea-formaldehyde resin. 2½
(D) Explain Block and Graft Polymers. 2½
(E) Give the applications of silicones. 2½
(F) Discuss preparation, properties and applications of neoprene rubber. 2½
3. (A) Write informative notes on the following :
(i) Polyvinyl chloride and
(ii) SBR. 5
(B) Explain the synthesis, properties and uses of polypropylene and regenerated celluloses. 5

OR

- (C) How is LDPE manufactured ? Describe its process. 2½
(D) Write preparation and uses of polyvinyl acetate. 2½
(E) Distinguish between Nylon-6 and Nylon-66. 2½
(F) Write short note on Polyesters. 2½

4. (A) Explain glassy state, glass transition temperature and its importance. 5
(B) What is vulcanization ? Discuss the process of sulphur vulcanization of rubber. 5

OR

- (C) Write short note on mechanical properties of polymers. 2½
(D) Write short note on polymer solubility. 2½
(E) What are the different types of degradation of polymers ? 2½
(F) Draw flow sheet for Injection moulding of plastics. 2½
5. Attempt any **TEN** questions of the following :
- (i) What are natural polymers ?
 - (ii) Define initiator and inhibitor.
 - (iii) What is Silk ?
 - (iv) Give the structure of melamine formaldehyde resin.
 - (v) What is curing process ?
 - (vi) What is weight average molecular weight of polymers ?
 - (vii) What are different types of polyethylenes ?
 - (viii) Define copolymers.
 - (ix) Write properties of cellulose acetate-butyrate.
 - (x) What is the need of degradation of polymer ?
 - (xi) What do you mean by TGA ?
 - (xii) What is thermofoaming ? 1×10=10