

E525

B. Sc. EXAMINATION, 2020

(Fifth Semester)

(Main & Re-appear)

(CHEMISTRY)

DCH315

Polymer Chemistry

Time : 2½ Hours]

[*Maximum Marks : 75*

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Four* questions in all. All questions carry equal marks.

1. (a) What are monomers and polymers ? Give suitable examples.
(b) Write short note on suspension polymerization.
(c) What is Zeigler-Natta Catalyst ? Explain coordination polymerization in the light of Zeigher-Natta catalyst.
(d) Explain the term molecular weight distribution and polydispersity index.
(e) Define glass transition temperature.
2. (a) Discuss the classification of Polymers based on the source of availability and structure of the Monomer chain.
(b) What do you mean by Copolymer ? Discuss the type of copolymerization with suitable examples.

3. Write short notes on the following :
- (a) Molecular forces and chemical bonding in polymers
 - (b) Texture of polymers
 - (c) Degree of polymerization
 - (d) Structure property relationship
 - (e) Bi-functional and poly-functional system.
4. What is co-polymerisation ? Give mechanism and its kinetics in detail.
5. (a) Write short note on the following :
- (i) Degree of crystallinity
 - (ii) Kinetics of ionic chain polymerization.
- (b) Mention *two* advantages and *two* disadvantages of solution polymerization over bulk polymerization.
6. What are the different ways of expressing molecular weight of polymers ? Discuss each type in detail. How is molecular weight related to degree of polymerization ?
7. (a) Write short note on End group analysis for calculating molecular weight determination methods.
- (b) Write Mark-Houwink expression. How can you determine MW of an unknown polymer sample using this equation ?
- (c) Define glass transition temperature and discuss the factor affecting it.
8. Discuss preparation, structure, properties and applications of Poly(vinyl chloride).
9. (a) Describe the principle and operation of injection molding and blow molding machines for processing of polymers. Also give their merits and demerits.
- (b) Differentiate the Novolac and Bakelite based on the structure.