

2023

Time - 3 hours

Full Marks - 60

*Answer all groups as per instructions.
Figures in the right hand margin indicate marks.*

GROUP - A

1. Answer all questions and fill in the blanks as required. [1 × 8]
- (a) The monomer used to prepare Nylon-6 is _____.
 - (b) The functionality of C_2H_2 is _____.
 - (c) The composition of a Zeigler-Natta catalyst is _____.
 - (d) What is PDI formula ?
 - (e) Between \bar{M}_w and \bar{M}_n , whose value is less ?
 - (f) What is the relationship between T_m and T_g for symmetrical polymers ?
 - (g) What is structural name of Teflon ?
 - (h) Give an example of conducting polymer.

[2]

GROUP – B

2. Answer any eight of the following questions within two to three sentences each. [1½ × 8

- (a) What are copolymers ? Give examples.
- (b) Mention the functionality of phenol, glycerol, ethylene glycol.
- (c) How is Nylon-6,6 prepared ?
- (d) Explain degree of crystallinity of a polymer.
- (e) What is vulcanisation of rubber ?
- (f) What are living polymers ?
- (g) Classify polymers on the basis of tacticity.
- (h) Name three experimental methods for the determination of molecular mass of polymers.
- (i) How is polypropylene prepared ? Mention its important uses.
- (j) What are polyurethanes ?

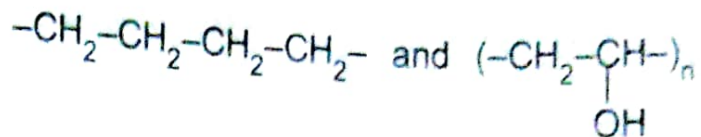
GROUP – C

3. Answer any eight of the following questions within 75 words each. [2 × 8

- (a) Establish the relation between extent of reaction and degree of polymerisation.

[3]

(b) Name the following polymers by IUPAC system :



- (c) Differentiate between thermosetting and thermoplastic polymers.
- (d) Differentiate between elastomers and fibres.
- (e) Name four types of polymerisation techniques.
- (f) Name the factors which affect crystalline melting point of polymers.
- (g) Give examples of addition and condensation polymerisations.
- (h) What is the difference between bakelite and novolac ?
- (i) What are biodegradable polymers ? Give examples.
- (j) How LDPE differs from HDPE by physical properties ?

GROUP – D

Answer all questions.

4. Write notes on :

[3 × 2

- (i) Texture of polymers
- (ii) Molecular forces and bonding in polymers

P.T.O.

[4]

OR

Give the classification of polymers on the basis of different schemes of classification. [6]

5. Discuss the mechanism and kinetics of step growth polymerisation. [6]

OR

Discuss mechanism and kinetics of copolymerisation. [6]

6. Explain the determination of molecular mass of polymers by viscometry method. [6]

OR

What is WLF equation ? Highlight the factors affecting glass transition temperature. [2 + 4]

7. Discuss the preparation and uses of the following : [3 × 2]
- (i) Poly vinyl acetate
 - (ii) Poly acryl amide

OR

Discuss the methods of preparation and uses of the following :

- (i) Teflon [3 × 2]
- (ii) Polyethylene