

NCERT INTEXT QUESTIONS

15.1. What are polymers?

Ans: Polymers are high molecular mass substances ($10^3 - 10^7 u$) consisting of a very large number of simple repeating structural units joined together through covalent bonds in a linear fashion. They are also called macromolecules. Ex: polythene, nylon 6,6, bakelite, rubber, etc.

15.2. How are polymers classified on the basis of structure? Ans: On the basis of structure, polymers are classified as:

- (i) Linear polymers in which the monomers are joined together to form long straight chains of polymer molecules. Forex: HDPE, PVC, nylons, etc.
- (ii) Branched chain polymers in which the monomers not only join in linear fashion but also form branches of different lenghts along the main chain. For ex: LDPE, glycogen, etc.
- (iii) Cross-linked polymers in which the intially formed linear polymer chains join together to form 3D network structure. For ex: bakelite, Urea-formaldehyde resin, etc.

15.3. Write the names of the monomers of the following polymers:

(i)

$$\begin{bmatrix} H & H & O & O \\ | & | & | & | \\ N - (CH_2)_6 - N - C - (CH_2)_4 - C \end{bmatrix}_{n}$$

Ans:

- (i) Hexamethylene diamine $\rm NH_2\text{-}(CH_2)6NH_2$ and adipic acid HOOC $\rm (CH_2)_4$ COOH
- (ii) Caprolactum
- (iii) Tetrafluoroethene $F_2C = CF_2$

15.4. Classify the following as addition and condensation polymers: Terylene, Bakelite, Polyvinyl chloride, Polythene
Ans:

Addition polymers: Polyvinyl chloride, Polythene Condensation polymers: Terylene, bakelite.

15.5. Explain the difference between Buna- N and Buna-S. Ans: Both are copolymers. Buna-N is a copolymer of 1,3-butadiene and acrylonitrile whereas Buna-S is a copolymer of 1,3-butadiene and styrene.

15.6. Arrange the following polymers in increasing order of their intermolecular forces.

- (i) Nylon 6,6, Buna-S, Polythene
- (ii) Nylon 6, Neoprene, Polyvinyl chloride

Ans: On the basis of intermolecular forces, polymers are classified as elastomers, fibres and plastics. The increasing order of intermolecular forces is: Elastomer < Plastic < fibre.

Thus, we have

- (i) Buns-S < Polythene < Nylon 6,6
- (ii) Neoprene < Polyvinyl chloride < Nylon 6.

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