

CBSE Class 12 physics
Important Questions
Chapter 15
Polymers

2 Mark Questions

1. Define polymers.

Ans. Polymer are defined a very large molecules having high molecular mass which are formed by joining of repeating structural units on a large scale.

2. Write various uses of polymers.

Ans. Polymers are used in manufacture of plastic buckets, cups and saucers, children's toys, packaging bags, synthetic clothing materials, automobile tyres, insulating materials etc. polymers are the back bone of five major industries – plastics, elastomers, fibres, paints & varnishes.

3. On what basis are polymers classified?

Ans. Polymers are classified on the basis of

- (a) Source
- (b) Structure
- (c) Mode of polymerisation
- (d) Molecular forces

4. What is the difference between a homopolymer and a copolymer?

Ans.

Homopolymer	Copolymer
The addition polymers formed by polymerisation of a single monomeric species	The polymers made by addition polymerisation from two different monomers are known as copolymers e.g.

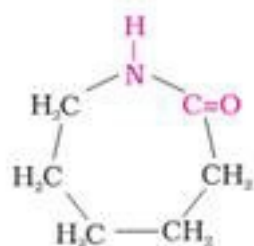
are known as homopolymers e.g. – polythene	Buna – S
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5. Explain the term *vulcanisation* of rubber?

Ans. To improve upon the physical properties of natural rubber a process of *vulcanization* is carried out. This process consists of heating a mixture of raw rubber with sulphur and an appropriate additive at a temperature range between 373K to 415K. On vulcanization, sulphur forms cross links at the reactive sites of double bonds and thus the rubber gets stiffened.

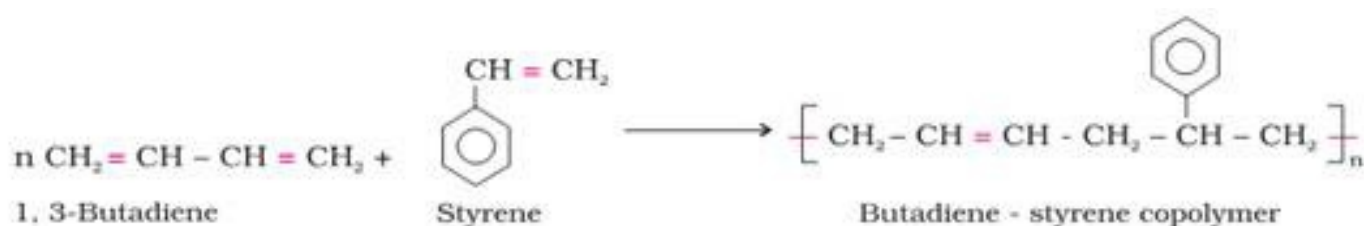
6. Write uses of bakelite and melamine.

Ans. Bakelite is used for making combs, phonograph records, electrical switches, handles. Melamine is used in manufacture of unbreakable crockery.



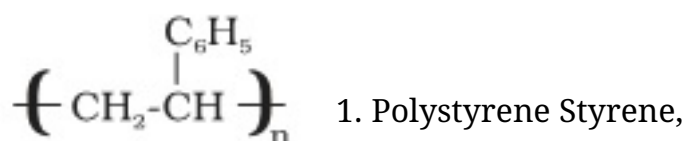
7. Give the monomer and preparation of Buna – S.

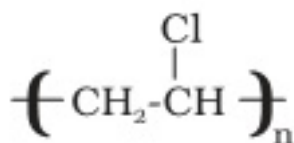
Ans. Preparation of Buna – S



8. Write monomers of polystyrene and PVC.

Ans. Polymer Monomer





2. PVC Vinyl Chloride,

9. How are the characteristics of natural rubber modified?

Ans. Natural rubber is soft at high temperatures and brittle at low temperatures. It is soluble in non – polar solvents and non – resistant to oxidizing agents. These properties can be modified by mixing raw rubber with sulphur. & an appropriate additive at a temperature 373K to 415K. This is called vulcanisation.

10. What are polymers?

Ans. Polymers are high molecular mass macromolecules, which consist of repeating structural units derived from monomers. Polymers have a high molecular mass (10³ - 10⁷ u). In a polymer, various monomer units are joined by strong covalent bonds. These polymers can be natural as well as synthetic. Polythene, rubber, and nylon 6, 6 are examples of polymers.

11. What are natural and synthetic polymers? Give two examples of each type.

Ans. Natural polymers are polymers that are found in nature. They are formed by plants and animals. Examples include protein, cellulose, starch, etc.

Synthetic polymers are polymers made by human beings. Examples include plastic (polythene), synthetic fibres (nylon 6, 6), synthetic rubbers (Buna - S).

12. How do you explain the functionality of a monomer?

Ans. The functionality of a monomer is the number of binding sites that is/are present in that monomer.

For example, the functionality of monomers such as ethene and propene is one and that of 1, 3-butadiene and adipic acid is two.

13. Define the term polymerisation.

Ans. Polymerization is the process of forming high molecular mass (10³ - 10⁷ u)

macromolecules, which consist of repeating structural units derived from monomers. In a polymer, various monomer units are joined by strong covalent bonds.

14. In which classes, the polymers are classified on the basis of molecular forces?

Ans. On the basis of magnitude of intermolecular forces present in polymers, they are classified into the following groups:

- (i) Elastomers
- (ii) Fibres
- (iii) Thermoplastic polymers
- (iv) Thermosetting polymers

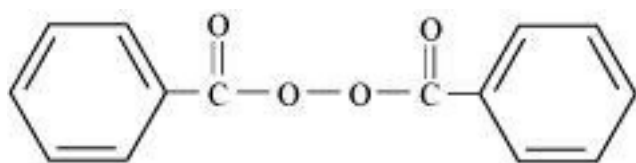
15. Write the free radical mechanism for the polymerisation of ethene.

Ans. Polymerization of ethene to polythene consists of heating or exposing to light a mixture of ethene with a small amount of benzoyl peroxide as the initiator.

The reaction involved in this process is given below:

16. Write the name and structure of one of the common initiators used in free radical addition polymerisation.

Ans. One common initiator used in free radical addition polymerization is benzoyl peroxide. Its structure is given below.



17. Write the monomers used for getting the following polymers.

(i) Polyvinyl chloride (ii) Teflon (iii) Bakelite

Ans. (i) Vinyl chloride ($CH_2 = CHCl$)

(ii) Tetrafluoroethylene ($CF_2 = CF_2$)

(iii) Formaldehyde (HCHO) and phenol (C_6H_5OH)