**CLASS : XII**

**SUBJECT : CHEMISTRY(polymers)**

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| **Sr. No.** | **Knowledge Based** | **Marks** |
| 1. | What are polymers? | 1 |
| 2. | Define the term monomer. | 1 |
| 3 | How are polymers classified on the basis of its structure? | 2 |
| 4 | What are natural and synthetic polymers? Give two examples of each type. | 2 |
| 5 | Is ( NH-CHR-CO )n, a homopolymer or a copolymer? | 1 |
| 6 | In which classes, the polymers are classified on the basis of molecular forces? | 2 |
| 7 | Explain the term copolymerisation and give two examples. | 2 |
| 8 | Define thermoplastics and thermosetting polymers with two examples of each. | 3 |
| 9 | Write the names of monomers of the following polymers: | 1 each |
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| 10 | Write the monomers for the following:  PVC, Teflon, Bakelite, novolac | 1 each |
| 11 | What are the monomeric repeating units of Nylon-6 and Nylon-6,6? | 1 each |
| 12 | Write the names and structures of the monomers of the following polymers:  (i) Buna-S (ii) Buna-N (iii) Dacron (iv) Neoprene | 1 each |
| 13 | How is dacron obtained from ethylene glycol and terephthalic acid ? | 2 |
| 14 | What is a biodegradable polymer ? Give an example of a biodegradable aliphatic  polyester. | 2 |
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| **S. No.** | **Understanding Based** |  |
| 1. | Distinguish between the terms homopolymer and copolymer and give an  example of each. | 2 |
|  | Identify the type of polymer:   1. –A-A-A-A-A-A-A 2. A-B-B-A-A-A-B-A | 2 |
| 2. | How do you explain the functionality of a monomer? | 1 |
| 3 | How can you differentiate between addition and condensation polymerisation? | 2 |
| 4 | Write the free radical mechanism for the polymerisation of ethene. | 3 |
| 5 | Explain the term copolymerisation and give two examples. | 2 |
| 6 | How does the presence of double bonds in rubber influence their structure and reactivity? | 2 |
| 7 | Explain the difference between Buna-N and Buna-S. | 2 |
| 8 | Discuss the main purpose of vulcanisation of rubber. | 2 |
| 9 | How does the presence of benzoquinone inhibit the free radical polymerisation of a vinyl derivative? | 2 |
| 10 | Why do we add diphenyl amine to rubber? | 2 |
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| **S. No.** | **Application** |  |
| 1. | Arrange the following polymers in increasing order of their intermolecular forces.  (i) Nylon 6,6, Buna-S, Polythene.  (ii) Nylon 6, Neoprene, Polyvinyl chloride. | 1 each |
| 2. | Classify the following as addition and condensation polymers: Terylene, Bakelite, Polyvinyl chloride, Polythene. | 1 each |
| 3 | Explain why free radical polymerisation of styrene gives a product in which phenyl groups are on alternate carbon atoms rather than on adjacent carbon atoms. | 2 |
| 4 | Identify the monomer in the following polymeric structures. | 1 each |
| **S.No.** | **Value Based** |  |
| 1. | In a school, lots of emphasis is given to 3R principle to reduce, recycle and reuse. People are encouraged to use natural products rather than using synthetic polymers   1. Are synthetic polymers useful or harmful? 2. What values are shown by the students following 3R principle 3. Name two polymers used in households. | 3 |
| 2. |  |  |
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| **S.No.** | **HOTS** |  |
| 1. | Bubble gum used by youngsters has a major constituent as polymer. Name it | 1 |
| 2. | Can enzyme be called a polymer? | 1 |
| 3 | Name a polymer used in making cups for hot drinks. | 1 |
| 4 | Can nucleic acids, proteins and starch be considered as step growth polymers? | 2 |
| 5 | A monomer of a polymer upon ozonolysis gives one mole of methylglyoxal and two moles of formaldehyde.   1. Identify the monomer of polymer 2. Give its free radical mode of addition polymerisation. | 2 |
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