CHAPTER 29

Polymers

1. Polymer formation from monomers starts by **[2002]**
(a) condensation reaction between monomers
(b) coordinate reaction between monomers
(c) conversion of monomer to monomer ions by protons
(d) hydrolysis of monomers.

2. Nylon threads are made of **[2003]**
(a) polyester polymer
(b) polyamide polymer
(c) polyethylene polymer
(d) polyvinyl polymer

3. Which of the following is fully fluorinated polymer? **[2005]**
(a) PVC (b) Thiokol
(c) Teflon (d) Neoprene

4. Bakelite is obtained from phenol by reacting with **[2008]**
(a) $(CH_2OH)_2$ (b) CH_3CHO
(c) CH_3COCH_3 (d) HCHO

5. Buna-N synthetic rubber is a copolymer of : **[2009]**
(a) $H_2C=CH-CH=CH_2$ and $H_5C_6-CH=CH_2$
(b) $H_2C=CH-CN$ and $H_2C=CH-CHCH_2$
(c) $H_2C=CH-CN$ and $H_2C=CH-\underset{\underset{CH_3}{|}}{C}=CH_2$
(d) $H_2C=CH-\underset{\underset{Cl}{|}}{C}=CH_2$ and $H_2C=CH-CH=CH_2$

6. The polymer containing strong intermolecular forces e.g. hydrogen bonding, is **[2010]**
(a) teflon (b) nylon 6, 6
(c) polystyrene (d) natural rubber

7. Thermosetting polymer, Bakelite is formed by the reaction of phenol with : **[2011RS]**
(a) CH_3CHO (b) HCHO
(c) HCOOH (d) CH_3CH_2CHO

8. The species which can best serve as an initiator for the cationic polymerization is : **[2012]**
(a) $LiAlH_4$ (b) HNO_3
(c) $AlCl_3$ (d) BaLi

9. Which one is classified as a condensation polymer? **[2014]**
(a) Dacron (b) Neoprene
(c) Teflon (d) Acrylonitrile

10. Which polymer is used in the manufacture of paints and lacquers ? **[2015]**
(a) Polypropene (b) Polyvinyl chloride
(c) Bakelite (d) Glyptal

11. Which of the following statements about low density polythene is **FALSE**? **[2016]**
(a) Its synthesis requires dioxygen or a peroxide initiator as a catalyst.
(b) It is used in the manufacture of buckets, dust-bins etc.
(c) Its synthesis requires high pressure.
(d) It is a poor conductor of electricity.

12. The formation of which of the following polymers involves hydrolysis reaction? **[2017]**
(a) Nylon 6 (b) Bakelite
(c) Nylon 6, 6 (d) Terylene

Answer Key

1	2	3	4	5	6	7	8	9	10	11	12			
(a)	(b)	(c)	(d)	(b)	(b)	(b)	(c)	(a)	(d)	(b)	(a)			

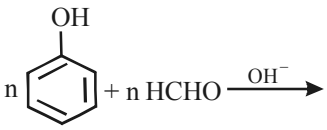
SOLUTIONS

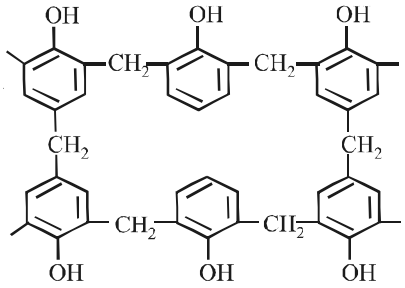
1. **(a)** Polymerisation starts either by condensation or addition reactions between monomers. Condensation polymers are formed by the combination of monomers with the elimination of simple molecules. Where as the addition polymers are formed by the addition together of the molecules of the monomer or monomers to form a large molecule without elimination of any thing.

2. **(b)** Nylon is a polyamide polymer.

3. **(c)** Teflon is polymer of $CF_2 = CF_2$.

4. **(d)** Bakelite is formed by the reaction of formaldehyde (HCHO) and phenol so the correct answer is (d).

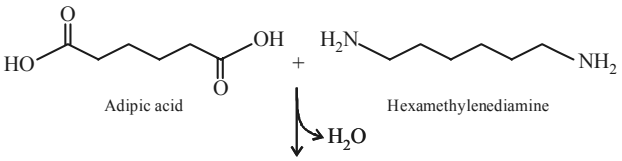


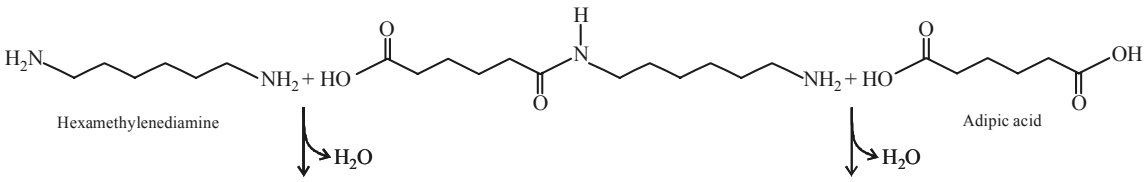


Bakelite

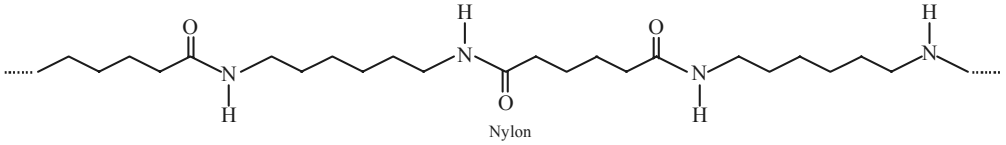
5. **(b)** Buna – N is a copolymer of butadiene ($CH_2 = CH - CH = CH_2$) and acrylonitrile ($CH_2 = CHCN$).

6. **(b)** Nylon 6, 6 has amide linkage capable of forming hydrogen bonding.





Polymerization

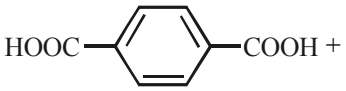


Nylon

7. **(b)**

8. **(c)** Lewis acids are the most common compounds used for initiation of cationic polymerisation. The more popular Lewis acids are $SnCl_4$, $AlCl_3$, BF_3 and $TiCl_4$.

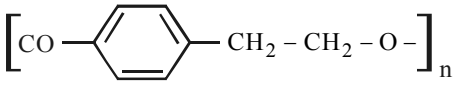
9. **(a)** Except Dacron all are additive polymers. Terephthalic acid condenses with ethylene glycol to give Dacron.



Terephthalic acid

$HO-CH_2-CH_2-OH \longrightarrow$

Ethylene glycol

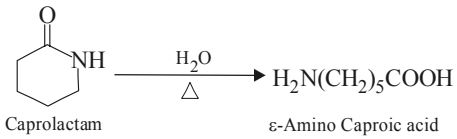


Dacron (Polyester)

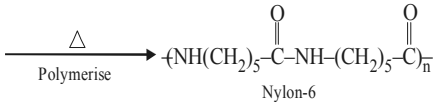
10. **(d)** Glyptal is used in the manufacture of paints and lacquers.

11. **(b)** High density polythene is used in the manufacture of housewares like buckets, dustbins, bottles, pipes etc. Low density polythene is used for insulating electric wires and in the manufacture of flexible pipes, toys, coats, bottles etc.

12. **(a)** Formation of Nylon-6 involves hydrolysis of caprolactum, (its monomer) in initial state.



Caprolactam ε-Amino Caproic acid



Polymerise Nylon-6