

## POLYMER CHEMISTRY

## 1. Type of Polymerisation

- Q 1. Addition polymerization reaction is of  
(A) 3 type (B) 4 type  
(C) 5 type (D) 2 type
- Q 2. Addition polymerization reaction occur in  
(A) 3 steps (B) 4 steps  
(C) 5 steps (D) 2 steps
- Q 3. Which of the following reagent does radical chain growth polymerization ?  
(A)  $\text{BF}_3/\text{H}_2\text{O}$  (B)  $\text{B}_4\text{li}/\text{THF}$   
(C)  $\text{R}_2\text{O}_2$  (D) Ziger nata catalyst
- Q 4. Zigler Natta catalyst is  
(A)  $\text{Al}(\text{C}_2\text{H}_5)_3 + \text{ZnCl}_2$   
(B)  $\text{Al}(\text{C}_2\text{H}_5)_3 + \text{TiCl}_4$   
(C)  $\text{Mn}(\text{C}_2\text{H}_5)_3 + \text{TiCl}_4$   
(D) None of these
- Q 5. In syndiotatic polymer, asymmetric carbon has  
(A) same configuration  
(B) arbitrary configuration  
(C) Alternate configuration  
(D) None of these
- Q 6. Which polymer has generally larger chain loughth  
(A) addition polymers  
(B) chain growth polymer  
(C) Chain reduce polymer  
(D) Condeusation polymer
- Q 7. Which of the following is an example of co-polymer?  
(A) Nylon – 6 (B) Nylon – 66  
(C) PVC (D) Rubber
- Q 8. How many type of Co-polymer exist?  
(A) 4 type (B) 2 type  
(C) 3 type (D) 6 type
- Q 9. Which of the following polymer is fibrous polymer?  
(A) Nylon 6 (B) PVC  
(C) Rubber (D) Polyethyleve
- Q 10. For natural polymer P.D.I is  
(A)  $\text{P.D.I.} > 1$  (B)  $\text{P.D.I.} < 1$   
(C)  $\text{P.D.I.} = 1$  (D)  $\text{P.D.I.} = 0$
- Q 11. For synthetic polymer, P.D.I. is  
(A)  $\text{P.D.I.} > 1$  (B)  $\text{P.D.I.} < 1$   
(C)  $\text{P.D.I.} = 1$  (D)  $\text{P.D.I.} = 0$
- Q 12. Isoprene rule  
(A)  $\text{C}_1 - \text{C}_1$  addition is allowed  
(B)  $\text{C}_4 - \text{C}_4$  addition is allowed  
(C)  $\text{C}_1 - \text{C}_4$  addition is allowed  
(D) None of these
- Q 13. The monomer of natural rubber is  
(A) 3- methyl -1, 2- butadiene  
(B) 2-methyl 1,3-butadiene  
(C) 2-methyl-1, 2-butadiene  
(D) S-methyl 1, 3- butadiene
- Q 14. Heating of rubber with sulphur is known as  
(A) galvanization (B) bessemerisation  
(C) vulcanisation (D) sulphonation
- Q 15. Synthetic polymer which resembles natural rubber is  
(A) chloroprene (B) neoprene  
(C) nylon (D) glyptal

## 2. Examples of Polymer

- Q 1. Which of the following is a natural polymer ?  
(A) Protein (B) Polythene  
(C) Buna -S (D) Bakelite
- Q 2. Which of the following sets contains only addition polymers?  
(A) Polythylene, polypropylene, terylene  
(B) Polyethylene, PVC, acrilon  
(C) Buna -S, nylon, polybutadine  
(D) Bakelite, PVC, polyethylene
- Q 3. Which of the following fibres is not made up of polyamides ?  
(A) Artificial silk (B) Natural silk  
(C) Wool (D) Nylon
- Q 4. Nylon is  
(A) polyester fibre (B) polyamide fibre  
(C) polythene derivative  
(D) polyethylene methyl acrylate fibre
- Q 5. The monomer of polystyrene is

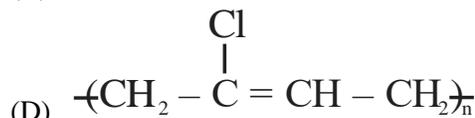
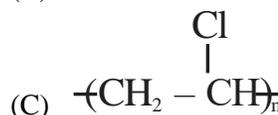
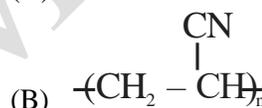
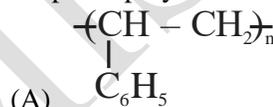
- (A)  $C_2H_5CH-CH_2$  (B)  $CH_2-CHCl$   
 (C)  $C_6H_5CH-CH_2$   
 (D)  $CH_2=CHCHO$
- Q 6. Which of the following statements is not correct ?  
 (A) Caprolactum is the monomer of nylon-6  
 (B) Terylene is a polyester polymer  
 (C) Phenol formaldehyde resin is known as bakelite
- Q 7. Which one of the following is an example of co-polymer ?  
 (A) Teflon (B) Buna -S  
 (C) PVC (D) Polypropylene
- Q 8. Natural polymer among the following is  
 (A) nylon (B) cellulose  
 (C) glyptal (D) terylene
- Q 9. 1,3-Butadiene and styrene on polymerisation give  
 (A) buna -S (B) terylene  
 (C) teflon (D) bakelite
- Q 10. Dacron is an example of  
 (A) polyamide (B) polypropylene  
 (C) polyurethane (D) polyester
- Q 11. The monomers used in manufacture of nylon-6,6 are  
 (A) sebacic acid and hexamethylene diamine  
 (B) adipic acid and butadiene  
 (C) sebacic acid and butadiene  
 (D) adipic acid and hexamethylene diamine
- Q 12. PVC polymer can be prepared by which of the monomers ?  
 (A)  $CH_3CH=CH_2$  (B)  $C_6H_5CH=CH_2$   
 (C)  $H_2C=CHCl$  (D)  $H_2C=CH_2$
- Q 13. Teflon is a polymer of the monomer  
 (A)  $CHF=CH_2$  (B)  $CHF=CHCl$   
 (C)  $CHCl=CHCl$  (D)  $F_2C=CF_2$
- Q 14. The fibre obtained by the condensation of hexamethylene diamine and adipic acid is  
 (A) dacron (B) nylon-6,6  
 (C) rayon (D) teflon
- Q 15. Which one of the following is a thermosetting polymer ?  
 (A) Nylon -6 (B) Nylon-6,6  
 (C) Bakelite (D) SBR
- Q 16. Given the polymers,

A = Nylon-6,6; B = Buna-S; C = Polythene  
 Arrange these in decreasing order of their intermolecular forces :

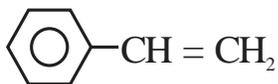
- (A)  $C < B < A$  (B)  $B > C > A$   
 (C)  $B < C < A$  (D)  $C < A < B$
- Q 17. Arrange the following in increasing order of their intermolecular forces  
 Nylon-6,6 (I), Buna -S (II), Polythene (III)  
 (A) II, III, I (B) III, II, I  
 (C) I, II, III (D) II, I, III

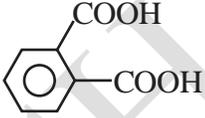
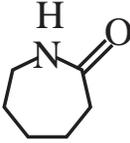
### 3. Examples of Polymer

- Q 1. Which of the following structures represents neoprene polymer ?

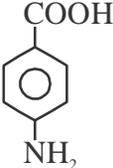
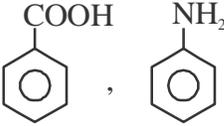
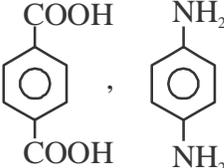


- Q 2. Which of the following is not a biopolymer ?  
 (A) Polypropylene (B) Glyptal  
 (C) Nylon-6,6 (D) Nylon-6
- Q 3. Which one of the following sets forms the biodegradable polymer ?  
 (A)  $H_2C=CH-CN$   
 and  $H_2C=CH-CH=CH_2$   
 (B)  $HO-CH_2-CH_2-OH$   
 and  $HOOC-\text{C}_6\text{H}_4-\text{COOH}$   
 (C)  $H_2N-CH_2-COOH$   
 and  $H_2N-(CH_2)_5-COOH$   
 (D)  $H_2C=CH-CH=CH_2$

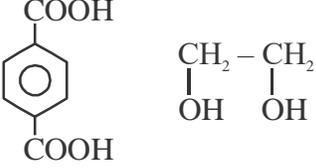
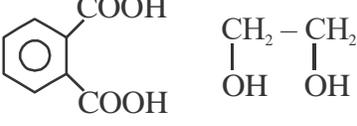
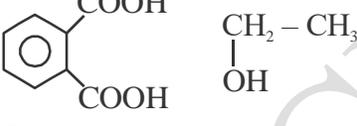


- Q 4. A polyamide synthetic polymer prepared by prolonged heating of caprolactum, is  
 (A) nylon-6,6 (B) nylon-6  
 (C) nylon-6,10 (D) glyptal
- Q 5. The polymer containing strong intermolecular forces e.g., hydrogen bonding is  
 (A) natural rubber (B) teflon  
 (C) nylon-6,6 (D) polystyrene
- Q 6. Bakelite is formed by polymerization between  
 (A) malaria (B) typhoid  
 (C) cholera (D) tuberculosis
- Q 7. Nylon threads are made of  
 (A) polyvinyl polymer  
 (B) polyester polymer  
 (C) polyamide polymer  
 (D) polyethylene polymer
- Q 8. Which one of the following is a chain growth polymer ?  
 (A) Starch (B) Nucleic acid  
 (C) Polystyrene (D) Protein
- Q 9. The monomer of dacron is/are  
 (A)  $\text{HOCH}_2 - \text{CH}_2\text{OH}$  and   
 (B)   
 (C)  $\text{HOCH}_2 - \text{CH}_2\text{OH}$  and   
 (D)  $\text{F}_2\text{C} = \text{CF}_2$
- Q 10. Which of the following is a polyester polymer ?  
 (A) Bakelite (B) Nylon-6,6  
 (C) Melamine (D) Terylene
- Q 11. A thermoplastic among the following is  
 (A) Bakelite (B) polystyrene  
 (C) terylene (D) urea – formaldehyde resin
- Q 12. In Buna-S, the symbol 'Bu' stands for  
 (A) n-butene (B) butadiene  
 (C) 1-butene (D) 2-butene

- Q 13. Which of the following is a biodegradable polymer ?  
 (A) PVC (B) Nylon-6  
 (C) Cellulose (D) Polythene
- Q 14. Buna -S is a polymer of  
 (A) butadiene only  
 (B) butadiene and nitril  
 (C) styrene only  
 (D) butadiene and styrene
- Q 15.  $\left[ \text{NH} (\text{CH}_2)_6 \text{NHCO} (\text{CH}_2)_4 \text{CO} \right]_n$  is a  
 (A) thermosetting polymer  
 (B) homopolymer  
 (C) co-polymer  
 (D) addition polymer
- Q 16. Which of the following is a biodegradable polymer ?  
 (A) Polythene (B) PVC  
 (C) Bakelite (D) PHBV
- Q 17. Terylene is the polyester of  
 (A) hexamethylene diamine and adipic acid  
 (B) vinyl chloride and formaldehyde  
 (C) melamine and formaldehyde  
 (D) ethylene glycol and terephthalic acid
- Q 18. Which one of the following statements is not true ?  
 (A) Buna -S is a co-polymer of butadiene and styrene  
 (B) Natural rubber is a 1,4-polymer of isoprene  
 (C) In vulcanization, the formation of sulphur bridges between different chains make rubber harder and stronger  
 (D) Natural rubber has the trans – configuration at every double bond
- Q 19. The catalyst used for olefine polymerization is  
 (A) Ziegler – Natta catalyst  
 (B) Wilkinson catalyst  
 (C) Raney nickel catalyst  
 (D) Merrifield resin
- Q 20. Among cellulose, polyvinyl chloride, nylon and natural rubber, the polymer in which the intermolecular force of attraction is weakest, is  
 (A) nylon  
 (B) polyvinyl chloride  
 (C) cellulose  
 (D) natural rubber
- Q 21. The monomer of polymer Kevlar are

- (A) 
- (B) 
- (C) 
- (D) None of these

Q 22. The monomer of polymer 'Glyptal' is

- (A) 
- (B) 
- (C) 
- (D) None of these

### PRACTICAL ORGANIC CHEMISTRY

- Q 1. Crystallisation method is based on  
 (A) Solubility difference  
 (B) Boiling point difference  
 (C) Melting point difference  
 (D) None of these
- Q 2. Simple distillation can be used to separate  
 (A) A mixture of benzene (b.p. 80°C) and thiophene (b.p. 84°C)  
 (B) A mixture of ethanol (b.p. 78.1°C) and water (b.p. 100°C)  
 (C) A mixture of ether (b.p. 35°C) and toluene (b.p. 110°C)  
 (D) None of the above
- Q 3. A mixture of acetone and methanol can be separated by  
 (A) vacuum distillation  
 (B) steam distillation  
 (C) fractional distillation  
 (D) simple distillation
- Q 4. A mixture of o- hydroxyacetophenone and p- hydroxyacetophenone can be separated by  
 (A) Sublimation (B) Steam distillation  
 (C) Fractional distillation  
 (D) Distillation
- Q 5. Steam distillation is used to separate the substance  
 (A) Which are volatile in steam  
 (B) Which are immiscible with H<sub>2</sub>O  
 (C) Certain non-volatile impurities  
 (D) All of these
- Q 6. A mixture of camphor and benzoic acid can be separated by  
 (A) Chemical method (B) Sublimation  
 (C) Fractional distillation  
 (D) Extraction with a solvent
- Q 7. In the Lassaigne's test for the detection of nitrogen in an organic compound, the blue or green colour is due to the formation of  
 (A) K<sub>2</sub>[Fe(CN)<sub>3</sub>] (B) K<sub>3</sub>[Fe(CN)<sub>3</sub>]  
 (C) Fe(CN)<sub>3</sub> (D) Fe<sub>4</sub>[Fe(CN)<sub>5</sub>]
- Q 8. A violet colour with sodium nitroprusside in the test of sulphur in an organic compound is due to the formation of  
 (A) Na<sub>2</sub>[Fe(CN)<sub>5</sub>NO]  
 (B) Na<sub>4</sub>[Fe(CN)<sub>2</sub>NOS]  
 (C) Na<sub>3</sub>[Fe(CN)<sub>3</sub>NS]  
 (D) Fe<sub>4</sub>[Fe(CN)<sub>5</sub>]<sub>3</sub>
- Q 9. For detection of sulphur in an organic compound the Lassaigne's extract is acidified with dilute acetic acid and lead acetate is then added to it. The black ppt is obtained which is due to the formation of

- (A) PbS (B) Na<sub>2</sub>S  
(C) PbSO<sub>4</sub> (D) None of these
- Q 10. When an organic compound containing phosphorus is fused with fusion mixture, it gives  
(A) Na<sub>2</sub>HPO<sub>4</sub> (B) Na<sub>3</sub>PO<sub>4</sub>  
(C) NaH<sub>2</sub>PO<sub>4</sub> (D) Na<sub>3</sub>PO<sub>4</sub>
- Q 11. The presence of carbon in an organic compound is detected by heating it with  
(A) sodium metal to convert it into NaCN  
(B) CaO to convert it into CO<sub>2</sub> which burns with a blue flame  
(C) CuO to convert it into CO<sub>2</sub> which turns lime water milky  
(D) Cu wire to give a bluish-green flame
- Q 12. Amongst the following elements present in an organic compound, the one which has no direct test for detection is  
(A) Cl (B) N  
(C) S (D) O
- Q 13. 0.2 g of an organic compound, on complete combustion, produces 0.12 g of water, then the percentage of hydrogen in it is  
(A) 5 (B) 10  
(C) 15 (D) 20
- Q 14. Arthracane is purified by  
(A) Fibrillation (B) Crystallization  
(C) Distillation (D) Sublimation
- Q 15. In Duma's method, the gas which is collected in nitrometer is  
(A) N<sub>2</sub> (B) NO  
(C) NH<sub>3</sub> (D) H<sub>2</sub>
- Q 16. In Carius tube, the compound ClCH<sub>2</sub>COOH was heated with fuming HNO<sub>3</sub> and AgNO<sub>3</sub>. After filtration and washing. A white ppt. was formed. The ppt. is  
(A) AgCl (B) AgNO<sub>3</sub>  
(C) Ag<sub>2</sub>SO<sub>4</sub> (D) ClCH<sub>2</sub>COOAg

## Answer Key

### 1. Type of Polymerisation

- (1). B (2). A (3). C  
(4). B (5). C (6). D  
(7). B (8). A (9). A  
(10). C (11). A (12). C  
(13). B (14). C (15). B

### 2. Examples of Polymer

- (1). A (2). B (3). A  
(4). B (5). C (6). D  
(7). B (8). B (9). A  
(10). D (11). D (12). C  
(13). D (14). B (15). C  
(16). A (17). A

### 3. Examples of Polymer

- (1). D (2). A (3). C  
(4). B (5). C (6). D  
(7). C (8). C (9). C  
(10). D (11). B (12). B  
(13). C (14). D (15). C  
(16). D (17). D (18). D  
(19). A (20). D (21). C  
(22). B

### 4. PRACTICAL ORGANIC CHEMISTRY

- (1). A (2). C (3). C  
(4). B (5). D (6). A  
(7). D (8). B (9). A  
(10). B (11). C (12). D  
(13). B (14). D (15). A  
(16). A