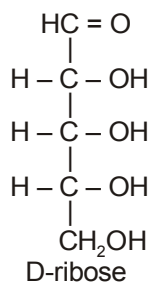


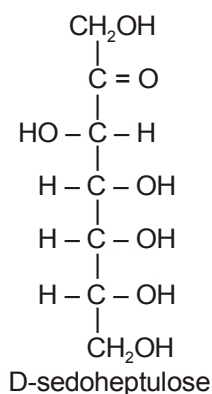
**BIOMOLECULES AND POLYMERS**

1. Given structure is ?



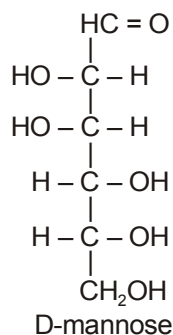
- (A) Aldopentose      (B) Aldohexose      (C) Ketopentose      (D) Aldotetrose

2. Given structure is ?



- (A) Aldopentose      (B) Aldohexose      (C) Ketoheptose      (D) Ketohexose

3. Given structure is ?

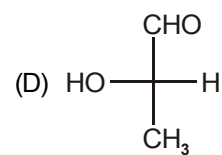
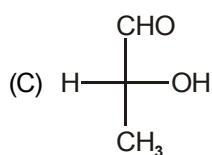
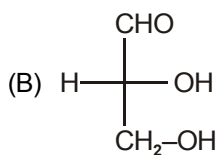
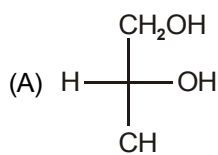


- (A) Aldopentose      (B) Ketohexose      (C) Ketoheptose      (D) Aldohexose

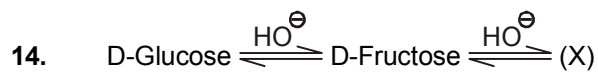
4. Which of the following is D-glyceraldehyde ?

- (A)  $\text{HOCH}_2 - \overset{\text{HC}=\text{O}}{\underset{\text{H}}{\text{C}}} - \text{OH}$      
 (B)  $\text{HO} - \overset{\text{H}}{\underset{\text{HC}=\text{O}}{\text{C}}} - \text{CH}_2\text{OH}$      
 (C)  $\text{HO} - \overset{\text{CH}_2\text{OH}}{\underset{\text{HC}=\text{O}}{\text{C}}} - \text{H}$      
 (D) A and B both

5. D-Glucose  $\xrightarrow[\text{H}_2\text{O}]{\text{Br}_2}$   
 (A) Aldonic acid (B) Adaric acid (C) Alditol (D) Tartaric acid
6. D-Glucose will form same osazone with  
 (A) D-Mannose (B) D-Fructose (C) D-Allose (D) Both (A) and (B)
7. Relation between D-Glucose & D-Fructose is  
 (A) C<sub>2</sub>-epimer (B) C<sub>3</sub>-epimer (C) Functional isomer (D) Positional isomers
8. Which of following is Oligosaccharides?  
 (A) Glucose (B) Fructose (C) Sucrose (D) Starch
9. Which of following is D-Glyceraldehyde?



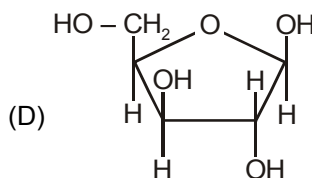
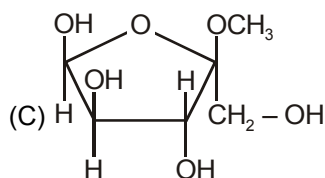
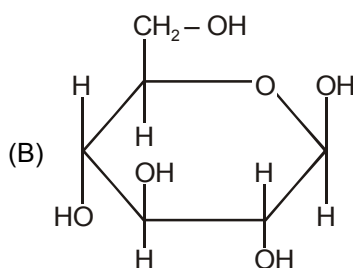
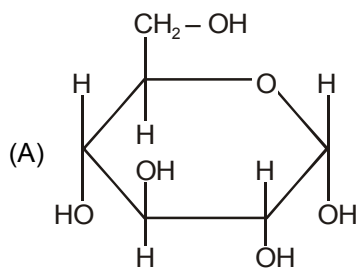
10. C<sub>2</sub>-epimer of D-Glucose is  
 (A) D-Gulose (B) D-Allose (C) D-Altrose (D) D-Mannose
11. C<sub>3</sub>-epimer of D-Glucose is  
 (A) D-Gulose (B) D-Allose (C) D-Altrose (D) D-Mannose
12. Which of following Carbohydrate is Aldohexose?  
 (A) D-Mannose (B) D-Glucose (C) D-Fructose (D) Both (A) and (B)
13. D-Glucose  $\xrightarrow[\text{H}_2\text{O}]{\text{Br}_2}$   
 Product is known as  
 (A) D-Glucitol (B) D-Gluconic acid (C) D-Glucaric acid (D) Tartaric acid



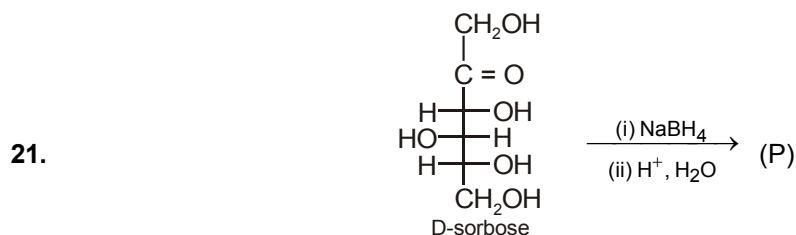
X is

- (A) D-Allose (B) D-Altrose (C) D-Mannose (D) D-Glucose
15. D-Glucose  $\xrightarrow{5\text{HIO}_4}$   
 Product is  
 (A) 4HCO<sub>2</sub>H, HCHO (B) 5HCO<sub>2</sub>H, HCHO (C) 4HCO<sub>2</sub>H, CO<sub>2</sub>, HCHO (D) 5HCHO, HCO<sub>2</sub>H
16. Which of following pair give same Osazone  
 (A) D-Glucose, Fructose (B) D-Glucose, D-Mannose  
 (C) D-Allose, D-Altrose (D) All

Comprehension (Q.17 to Q.20)



17. Relation between (A) and (B) is  
 (A) Anomers (B) Positional isomer (C) Functional isomer (D) Enantiomer
18. Structure of  $\beta$ -D-Glucopyranose is  
 (A) A (B) B (C) C (D) D
19. Which of compound not undergo mutarotation  
 (A) A (B) B (C) C (D) None
20. How many mole of acetic anhydride will consumed when it reacts with compound (A)  
 (A) 3 (B) 4 (C) 5 (D) 6

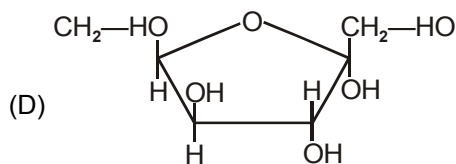
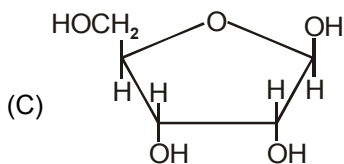
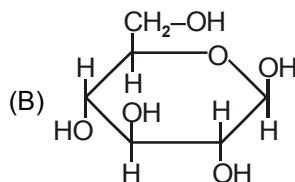
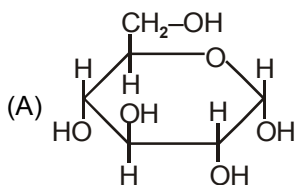


Number of stereoisomer of product (P) is :

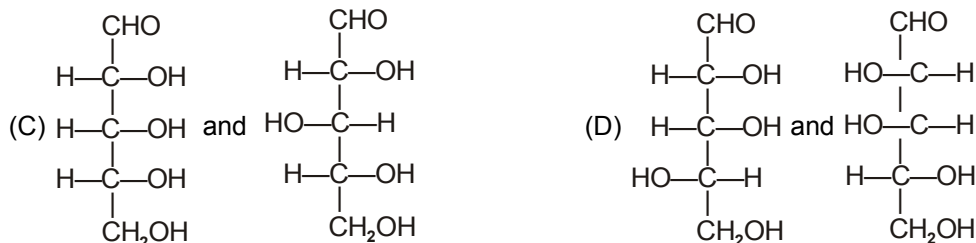
- (A) 4 (B) 10 (C) 12 (D) 16
22. The main structural features of proteins is  
 (A) Ester linkage (B) Ether linkage (C) Peptide linkage (D) All of these
23. Which compound can exist in a dipolar (Zwitter ion) structure?  
 (A)  $C_6H_5CH_2CH(N=CH_2)COOH$  (B)  $(CH_3)_2CHCH(NH_2)COOH$   
 (C)  $C_6H_5CONHCH_2COOH$  (D)  $HOOCCH_2CH_2COCOOH$
24. Vitamins C is chemically  
 (A) Ascorbic acid (B) Citric acid (C) Aspirin (D) Aspartic acid
25. In an amino acid, the carboxylic group ionises at  $pK_{a_1} = 2.34$  and ammonium ion at  $pK_{a_2} = 9.60$ . The iso electric point of the amino acid is at pH  
 (A) 5.97 (B) 2.34 (C) 9.60 (D) 6.97

26. Which statement is incorrect about peptide bond?  
 (A) C—N bond length in proteins is longer than usual bond length of C—N bond  
 (B) Spectroscopic analysis shows planar structure of  $\begin{array}{c} \text{—C—NH—} \\ || \\ \text{O} \end{array}$  bond  
 (C) C—N bond length in proteins is smaller than usual bond length of C—N bond  
 (D) None of these
27. A triglyceride can have how many different acyl groups?  
 (A) 3 (B) 2 (C) 1 (D) 4
28. Which one of the following is natural polymer  
 (A) Starch (B) Nylon-6  
 (C) Teflon (D) Buna-S, Styrene Butadiene Rubber
29. Which of the following is homopolymer?  
 (A) Starch (B) Polystyrene (C) Orlon (D) All of these
30. Which of the following monomers can undergoes radical, cationic as well as anionic polymerisation with equal ease?  
 (A)  $\begin{array}{c} \text{CH}_3\text{—C=CH}_2 \\ | \\ \text{CH}_3 \end{array}$  (B)  $\text{C}_6\text{H}_5\text{—CH=CH}_2$  (C)  $\text{CH}_2=\text{CH—CN}$  (D)  $\text{CH}_2=\text{CH}_2$
31. Ziegler-Natta catalyst is  
 (A)  $\text{R}_3\text{Al}$  (B)  $\text{TiCl}_4$  (C)  $\text{R}_3\text{Al} + \text{TiCl}_4$  (D)  $\text{R}_3\text{B} + \text{TiCl}_2$
32. Monomer of Teflon is  
 (A) Monochloroethene (B) 1, 2-Difluoroethene  
 (C) 1, 1, 2-Trifluoroethene (D) Tetrafluoroethene
33. Orlon is polymer of  
 (A) Styrene (B)  $\text{CF}_2=\text{CF}_2$  (C) Vinyl chloride (D) Acrylonitrile
34. Intermolecular force present in nylon-66 is  
 (A) vander Waal (B) Hydrogen bond  
 (C) Dipole-Dipole interactions (D) Sulphide linkage
35. Nylon-66 is made by using  
 (A) Phenol (B) Benzaldehyde (C) Adipic acid (D) Succinic acid
36. Polymer which has amide linkage is  
 (A) Nylon-66 (B) Terylene (C) Teflon (D) Bakelite
37. Bakelite is prepared by the reaction between  
 (A) Phenol and formaldehyde  
 (B) Ethylene glycol and dimethylphthalate  
 (C) Urea and formaldehyde  
 (D) Tetramethylene glycol and hexamethylene diamine
38. Natural rubber is a polymer of  
 (A) Butadiene (B) Ethyne (C) Styrene (D) Isoprene
39. Terylene is a condensation polymer of ethylene glycol and  
 (A) Benzoic acid (B) Phthalic acid  
 (C) Salicylic acid (D) Terephthalic acid

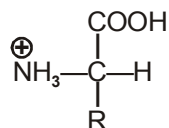
40. Cellulose acetate is a  
 (A) Natural polymer (B) Semisynthetic polymer  
 (C) Synthetic polymer (D) Plasticiser
41. A condensation polymer among the following polymers is  
 (A) Teflon (B) Polystyrene (C) PVC (D) Dacron
42. In elastomer, intermolecular forces are  
 (A) Nil (B) Weak (C) Strong (D) Very strong
43. Which one of the following is a polyamide?  
 (A) Teflon (B) Nylon-66 (C) Terylene (D) Bakelite
44. Glycosidic linkage is present in  
 (A) Sucrose (B) Maltose (C) Lactose (D) All
45. Which of following amino acid has lowest iso electric point?  
 (A) Lysine (B) Aspartic acid (C) Glycine (D) Alanine
46. Protein on hydrolysis give  
 (A)  $\alpha$ -amino acid (B)  $\beta$ -amino acid (C)  $\gamma$ -amino acid (D) All
47. Which of following amino acid is optically inactive  
 (A) Glycine (B) Alanine (C) Valine (D) Leucine
48. Peptide linkage is present in  
 (A) Protein (B) Nylon-6, 6 (C) Sucrose (D) both (A) & (B)
49. Product obtained by hydrolysis of lactose are  
 (A) Glucose & fructose (B) Glucose, mannose  
 (C) Mannose & fructose (D) Galactose, Glucose
50. Which of following is amino acid?  
 (A)  $\text{NH}_2\text{—CH}_2\text{—CO}_2\text{H}$  (B)  $\text{NH}_2\text{—CH}_2\text{—CH}_2\text{—CO}_2\text{H}$   
 (C)  $\text{NH}_2\text{—CH}_2\text{—CH}_2\text{—CH}_2\text{—CO}_2\text{H}$  (D) All
51. Which of following is structure of  $\beta$ -D-Glucopyranose?





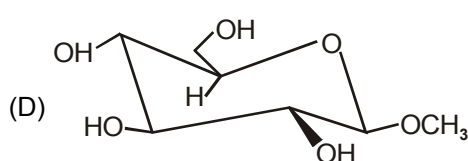
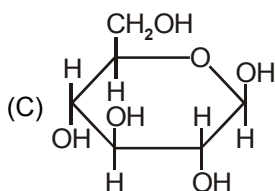
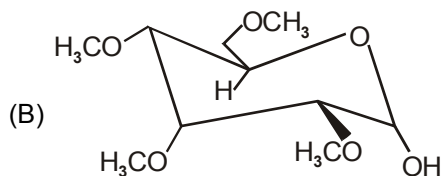
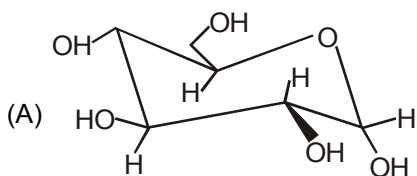


63. Glucose molecule reacts with 'X' number of molecule of phenylhydrazine to yield osazone. The value of X is  
 (A) Three (B) Two (C) One (D) Four
64. Which of the following reagents cannot distinguish between glucose and fructose?  
 (A) Tollen's reagent (B) Fehling's solution (C) Benedict's solution (D) All of these
65. Cellulose is a polymer of  
 (A) Glucose (B) Fructose (C) Ribose (D) Sucrose
66. Which of the following is an example of Keto-hexose?  
 (A) Mannose (B) Galactose (C) Maltose (D) Fructose
67. When glucose reacts with bromine water, the main product is  
 (A) Acetic acid (B) Saccharic acid (C) Glyceraldehyde (D) Gluconic acid
68. All monosaccharide ..... Tollen's reagent  
 (A) oxidises (B) reduces (C) condense with (D) add to
69. The number of chiral centres in (+) glucose is  
 (A) 4 (B) 3 (C) 2 (D) 1
70. Protein is polymer of  
 (A) Amino acid (B)  $\alpha$ -Amino acid (C)  $\gamma$ -Amino acid (D)  $\beta$ -Amino acid
71. Amino acid may be  
 (A) Neutral (B) Basic (C) Acidic (D) Any one of these
72. The given structure of  $\alpha$ -amino acid will exist at which pH?

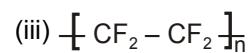
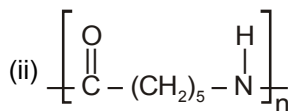
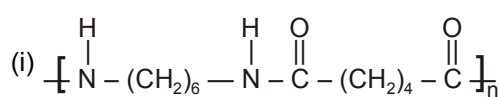


- (A) 7 (B) 14 (C) 0 (D) 12
73. Peptide linkage is  
 (A)  $\text{—}\overset{\text{O}}{\parallel}\text{C—O—}$  (B)  $\text{—}\overset{\text{O}}{\parallel}\text{C—NH}_2$  (C)  $\text{—}\overset{\text{O}}{\parallel}\text{C—NH—NH}_2$  (D)  $\text{—}\overset{\text{O}}{\parallel}\text{C—NH—}$
74. Complete hydrolysis of cellulose gives  
 (A) L-glucose (B) D-fructose (C) D-ribose (D) D-glucose
75. Number of chiral carbons in  $\beta$ -D-(+)-glucose is  
 (A) six (B) three (C) four (D) five

76. The pair of compounds in which both the compounds give positive test with Tollen's reagent is  
 (A) glucose and sucrose (B) fructose and sucrose  
 (C) acetophenone and hexanal (D) glucose and fructose
77. Among cellulose, polyvinyl chloride, nylon, and natural rubber, the polymer in which the intermolecular force of attraction is the weakest is  
 (A) polyvinyl chloride (B) natural rubber (C) nylon (D) cellulose
78. D-Glucose & L-Glucose are  
 (A) Enantiomers (B) Diastereomers (C) Epimers (D) Anomers
79. Identify the pair of Epimers  
 (A) D-Glucose & D-Fructose (B) D-Glucose & L-Glucose  
 (C) D-Glucose & D-Mannose (D) D-Glucose & D-Gulose
80. The number of Stereogenic centres in  $\alpha$ -D-Glucose are  
 (A) 4 (B) 5 (C) 3 (D) 2
81.  $\alpha$ -D-Glucose and  $\beta$ -D-Glucose are  
 (A) Epimers (B) Anomers (C) Enantiomers (D) Acetals
82. Identify the non reducing sugar



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

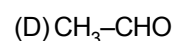
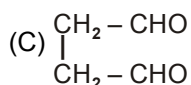
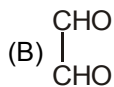
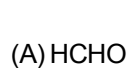


84. Classify the following as addition and condensation polymers :  
 Terylene, Bakelite, Polyvinyl chloride, Polythene.

85. Arrange the following polymers in increasing order of their intermolecular forces.  
 (i) Nylon-66, Buna-S, Polythene (ii) Nylon-6, Neoprene, Polyvinyl chloride

86. Which percentage of sulphur is used in the vulcanization of rubber?  
 (A) 3% (B) 5% (C) 30% (D) 55%

87. Reductive ozonolysis of polymer of 1, 3-butadiene will mainly form.





# ANSWER KEY

1. A      2. C      3. D      4. C      5. A      6. D      7. C  
8. C      9. B      10. D      11. B      12. D      13. B      14. C  
15. B      16. D      17. A      18. B      19. D      20. C      21. B  
22. C      23. B      24. A      25. A      26. A      27. A      28. A  
29. D      30. B      31. C      32. D      33. D      34. B      35. C  
36. A      37. A      38. D      39. D      40. B      41. D      42. B  
43. B      44. D      45. B      46. A      47. A      48. D      49. D  
50. D      51. B      52. B      53. A      54. B      55. C      56. D  
57. D      58. C      59. D      60. D      61. D      62. C      63. A  
64. D      65. A      66. D      67. D      68. B      69. A      70. B  
71. D      72. C      73. D      74. D      75. D      76. D      77. B  
78. A      79. C      80. B      81. B      82. D
83. (i) Hexamethylene diamine and adipic acid, (ii) Caprolactam, (iii) Tetrafluoroethene
84. Addition polymers : Polyvinyl chloride, Polythene  
Condensation polymers : Terylene , Bakelite
85. in order of increasing intermolecular forces  
(i) Buna-S, Polythene, Nylon 6.6., (ii) Neoprene, polyvinyl chloride , Nylon 6.
86. B      87. C