Multiple Choice Questions

Carbohydrates

[MHT-CET 2004]

1. Glucose on oxidation gives the acid containing the C–chiral atoms equal to
a) 2 b) 3 c) 4 d) 5

[MHT-CET 2005]

2. Raffinose is
a) trisaccharide b) disaccharide c) monosaccharide d) polysaccharide

[MHT-CET 2007]

3. Glucose gives silver mirror with ammoniacal silver nitrate because it has
a) aldehyde group b) ester group
c) ketone group d) alcoholic silver nitrate

4. Sucrose on hydrolysis gives
a) glucose and maltose b) glucose and lactose
c) glucose and fructose d) only glucose

[MHT-CET 2009]

5. Stachyose is a
a) monosaccharide b) disaccharide c) trisaccharide d) tetrasaccharide

[MHT-CET 2010]

6. Which of the following is a trisaccharide ?
a) Stachyose b) Sucrose c) Raffinose d) Ribose

[MHT-CET 2011]

7. Glucose on reaction with Br_2 water gives
a) glucaric acid b) gluconic acid c) saccharic acid d) citric acid

[MHT-CET 2014]

8. One mole of stachyose on hydrolysis yields.
a) 1 mole of glucose + 1 mole of fructose + 2 moles of galactose
b) 2 moles of glucose + 1 mole of fructose + 1 mole of galactose
c) 1 mole of glucose + 2 moles of fructose + 1 mole of galactose
d) 2 moles of glucose + 2 moles of fructose

[MHT-CET 2015]

9. During conversion of glucose into glucose cyanohydrins, what functional group / atom of glucose is replaced ?
a) hydrogen b) aldehydic group
c) primary alcoholic group d) secondary alcoholic group

[MHT-CET 2016]

10. Glucose on oxidation with bromine water yields gluconic acid. This reaction confirms presence of
a) six carbon atoms linked in straight chain b) secondary alcoholic group in glucose
c) aldehyde group in glucose d) primary alcoholic group in glucose

When one mole of lactose is hydrolyzed, the hydrolysate contains.
a) 1.0 mol Glucose + 2.0 mole Galactose b) 1.0 mol Galactose + 1.0 mole Glucose
c) 2.0 mol Glucose d) 1.0 mol Glucose + 1.0 mole Fructose

Which among the following is a product of hydrolysis of one mole raffinose ?
a) 2 moles of Glucose
b) 2 moles Glucose + 1 mole Fructose + 1 mole Galactose
c) 1 mole Fructose + 2 moles Glucose
d) 1 mole Glucose + 1 mole Fructose + 1 mole Galactose

Which among the following reagents is used to obtain gluconic acid from glucose ?
a) Acetic anhydride b) Acetyl chloride c) Bromine water d) dil. Nitric acid

Which among the following reagents is used for conversion of glucose to glucoxime ?
a) Dilute Nitric acid b) Br_2 water c) Hydroxylamine b) HCN

28. Identify the number of oxygen atoms present in saccharic acid.
a) 6 b) 8 c) 4 d) 12

29. How many moles of acetic acid are obtained in the reaction when one mole glucose is treated with excess acetic anhydride ?
a) 3 moles b) 5 moles c) 2 moles d) 4 moles

30. What is the quantity of glucose obtained when 68.4 g of sucrose is hydrolyzed in laboratory under ideal conditions ? (Molar mass of sucrose = 342 g mol^{-1})
a) 68.4 g b) 198.0 g c) 36.0 g d) 180 g

31. Which among the following compounds is obtained when glucose reacts with hydrogen cyanide ?
a) Gluconic acid b) Saccharic acid
c) Glucose cyanohydrin d) n – Hexane

32. What is the product obtained when Br_2 water reacts with glucose ?
a) Gluconic acid b) 1, 6–Dibromoglucose
c) Saccharic acid d) Bromohexane

33. Which reagent among the following is used to confirm presence of aldehydic carbonyl group in glucose ?
a) Dilute nitric acid b) Hydroxylamine c) Bromine water d) Acetic anhydride

34. Which among the following sugars does not reduce Tollen's reagent ?
a) Ribose b) Lactose c) Maltose d) Sucrose

35. Which among the following is a natural biopolymer of monosaccharides ?
a) Isoprene b) Neoprene c) Glycogen d) Silk

36. On hydrolysis sucrose gives
a) 2 moles of galactose b) 2 moles of fructose
c) 2 moles of glucose d) equimolar mixture of glucose and fructose

37. Which among the following observations suggests that glucose also exists in cyclic form?
a) Hydroxylamine with glucose to form glucose oxime.
b) Acetylation of glucose obtains glucose pentaacetate.
c) Glucose does not undergo condensation with 2, 4-dinitrophenylhydrazine.
d) Prolonged heating of glucose with HI yields n-hexane.

38. Which of the following statements is NOT true about saccharic acid ?
a) It can be obtained from gluconic acid
b) It contains one carboxyl group and four hydroxyl groups
c) It can be obtained from glucose
d) It contains two carboxyl groups

39. Which of the following reagents is used to detect presence of five hydroxyl groups in a glucose molecule ?
a) Acetic anhydride b) Dilute nitric acid c) Br_2 water d) Hydroxyl amine

40. Which among the following reagents is used to confirm the presence of carbonyl group in glucose ?
a) dilute HNO_3 b) hot HI c) Br_2 water d) NH_2OH

41. Which of the following molecules reduces Fehling's solution ?
a) Erythrose b) Acetone c) Sucrose d) Butan - 2 - one

[MHT-CET 2021]

42. Identify ketose sugar from the following.
a) Glucose b) Threose c) Fructose d) Ribose

43. Identify the product obtained in the following conversion.

$$\text{Glucose} \xrightarrow[Br_2 \text{ water}]{(O)} \text{Product}$$

a) Gluconic acid b) n–Hexane
c) Saccharic acid d) Glucose Cyanohydrin

44. Formation of gluconic acid from glucose by oxidation using Br_2 water shows that
a) the six carbon atoms of glucose are in a straight chain.
b) the presence of aldehyde group in glucose.
c) glucose contains one primary alcoholic group.
d) glucose contains five hydroxyl groups.

45. Which among the following compounds is NOT oligosaccharide ?
a) Maltose b) Ribose c) Stachyose d) Raffinose

46. Identify the reagent R used in following conversion.

$$\text{Glucose} \xrightarrow{R} \text{Saccharic acid}$$

a) NH_2OH b) dil. HNO_3 c) KCN d) HI/Δ

47. Which among the following statements is true about threose ?
a) It is aldehydic sugar. b) It is a disaccharide.
c) It is a keto sugar d) It is a pentose sugar.

48. Which from following statements is NOT true about maltose ?
a) It is reducing sugar b) It is milk sugar
c) It is disaccharide d) It contains α–1, 4 – glycosidic bond.

49. Identify the product obtained when glucose is treated with hydroxylamine.
a) Gluconic acid b) Glucose cyanohydrin
c) Glucose oxime d) n – Hexane

79. Which from following molecules produces 1 mole each of glucose, fructose and galactose when 1 mole of that molecule is hydrolyzed ?
a) Raffinose b) Stachyose c) Lactose d) Sucrose

80. Which carbon atoms of glucose in Fischer projection formula, numbered from 1 to 6, are not chiral carbons ?
a) 3 and 5 b) 1 and 6 c) 1 and 2 d) 2 and 4

81. Which of the following reagents is used to confirm that glucose contains one carbonyl group ?
a) Bromine water b) Dilute nitric acid
c) Hydrogen cyanide d) Acetic anhydride

82. Which among the following carbohydrate molecules yields highest number of monosaccharide units when one mole of it is hydrolyzed ?
a) Stachyose b) Sucrose c) Lactose d) Raffinose

Proteins and Enzymes

[MHT-CET 2015]

83. Which of the following proteins is globular ?
a) Collagen b) Albumin c) Myosin d) Fibroin

[MHT-CET 2019]

84. β-pleated sheets of polypeptide chains are present in
a) Secondary structure b) Tertiary structure
c) Primary structure d) Quaternary structure

85. Which of the following molecules forms a zwitter ion ?
a) H_2NCH_2COOH b) $CH_3COC_2H_5$ c) CH_3COOCH_3 d) CH_3CH_2COOH

86. The enzyme which converts maltose to glucose is
a) maltase b) lysine c) insulin d) zymase

[MHT-CET 2020]

87. How many optical isomers are possible for a compound having 3 asymmetric carbon atoms ?
a) 9 b) 3 c) 8 d) 6

88. What is molecular formula of glyceraldehyde ?
a) $C_3O_3H_8$ b) $C_2O_2H_2$ c) $C_4O_3H_6$ d) $C_3O_3H_6$

89. How many optical isomers are possible for a compound having four asymmetric carbon atoms ?
a) 16 b) 8 c) 4 d) 12

90. Which among the following is a globular protein ?
a) Collagen b) Fibroin c) Insulin d) Myosin

91. Which among the following types of linkages is present in cellulose ?
a) $1 \rightarrow 6\ \beta$ glycosidic linkages b) $1 \rightarrow 4\ \alpha$ glycosidic linkages
c) $1 \rightarrow 4\ \beta$ glycosidic linkages d) $1 \rightarrow 6\ \alpha$ glycosidic linkages

What is the number of chiral carbon atoms in glyceraldehyde ?
a) Zero b) Two c) One d) Three

What change is observed in glucose when it is heated with hydrogen iodide for prolonged time ?
a) last carbon is oxidized to – COOH
b) –CHO reduces to $-CH_2OH$
c) All carbon atoms are reduced completely to form hydrocarbon.
d) –CHO changes to oxime group.

Which among the following reagents is used to convert –CHO group of glucose to –COOH group ?
a) dil. HNO_3 b) $Na - Hg/H_2O$ c) NH_2OH d) Br_2 water

What is the sum total of masses of products obtained when 17.1 g of sucrose is hydrolyzed in acidic medium ? (Molar mass of sucrose = 340 g mol^{-1})
a) 38.5 g b) 18.0 g c) 32 g d) 35.8 g

Nucleic acids

[MHT-CET 2007]

108. Zwitter ion is formed by
a) aniline b) acetanilide c) benzoic acid d) glycine

[MHT-CET 2016]

109. Which of the following amino acids is basic in nature ?
a) Valine b) Tyrosine c) Arginine d) Leucine

[MHT-CET 2017]

110. The amino acid which is basic in nature is
a) Histidine b) Tyrosine c) Proline d) Valine

[MHT-CET 2018]

111. Which carbon atom of deoxy ribose sugar in DNA does NOT contain $-\overset{|}{\underset{|}{C}}-OH$ bond ?
a) C_5 b) C_3 c) C_2 d) C_1

[MHT-CET 2019]

112. Which of the following is NOT present in DNA ?
a) Adenine b) Uracil c) Guanine d) Thymine

113. The compound containing two hetero cyclic rings is
a) Uracil b) Thymine c) Guanine d) Cytosine

[MHT-CET 2020]

114. Which from following pairs of symbol and nature of amino acids is NOT correct ?
a) Glu – Acidic b) Asp – Neutral c) Leu – Neutral d) His – Basic