

Carbohydrate Chemistry

I. MCQ :

Choose the correct answer:

1. Which type of bonding does NaCl have?

- a) Polar covalent bond.
- b) Nonpolar covalent bond.
- c) Ionic bond.
- d) Hydrophobic bond.

2. The forces of attraction that exist between nonpolar molecules are called:

- a) Covalent bonds.
- b) Hydrophobic interactions.
- c) Hydrogen bonds.
- d) Ionic bonds.

3. Attraction between the transient opposite dipoles of neighboring atoms is called:

- a) Ionic bonds.
- b) Van der Waal interactions.
- c) Polar covalent bonds.
- d) Hydrophobic interactions.

4. Water molecules are held together by:

- a) Polar covalent bonds.
- b) Hydrogen bonds.
- c) Nonpolar covalent bonds.
- d) Ionic bonds.

5. The tendency of nonpolar compounds to cluster together in an aqueous medium is known as:

- a) Nonpolar covalent bond.
- b) Hydrogen bond.
- c) Hydrophobic interactions.
- d) Van der Waal interactions.

6. The following are Aldohexoses:

- a) Glucose, fructose
- b) Fructose, ribose.
- c) Glucose, Galactose
- d) Ribose, glucose

7. The sugar found in DNA is:

- a) Xylose.
- b) Ribose.
- c) Deoxyribose.
- d) Ribulose.

8. Sugar alcohol derived from glucose is:

- a) Sorbitol.
- b) Inositol.
- c) Dulcitol.
- d) Lipositol.

9. The sugar found in RNA is:

- a) Ribose.
- b) Deoxyribose.
- c) Ribulose.
- d) Erythrose.

10. A sugar alcohol is

- a) Mannitol.
- b) Fructose.
- c) Galactose
- d) L- ascorbic acid.

11. One of the following by hydrolysis does not give glucose units:

- a) Maltose.
- b) Isomaltose.
- c) Starch
- d) Lactose

12. All the following are reducing disaccharides except:

- a) Isomaltose.
- b) Lactose.
- c) Sucrose.
- d) Maltose

13. A disaccharide which contains glucose and fructose is:

- a) Lactose.
- b) Isomaltose.
- c) Sucrose.
- d) Maltose

14. The only sulfate free GAG is:

- a) Heparin.
- b) Hyaluronic acid.
- c) Inulin.
- d) Dextrin.

15. A polysacchharide which is stored in animals is

- a) Glycogen
 - b) Starch
 - c) Inulin
 - d) Dextrin
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16. The polysaccharide which is used to prevent constipation:

- a) Heparin.
- b) Glycogen.
- c) Cellulose.
- d) Inulin.

17. One of the following polysaccharides does not give glucose units by hydrolysis:

- a) Glycogen
- b) Starch
- c) Inulin
- d) Cellulose

18. Which of the following is ketose?

- a) Galactose
- b) Fructose
- c) Mannose
- d) Glucose

19. Sorbitol is produced by reduction of:

- a) Galactose
- b) Glucose
- c) Mannose
- d) Ribose

20. Which of the following is a glycosaminoglycans:

- a) Inulin
- b) Heparin
- c) Glucosamine
- d) Galacosamine

21. α and β forms of D-glucose are:

- a) Disaccharides.
- b) Polysaccharides.
- c) Anomers.
- d) Mirror image isomers.

22. A pentose sugar is

- a) Dihydroxyacetone
- b) Ribulose
- c) Fructose
- d) Glucose

23. The following is not a monosaccharide derivative:

- a) Sorbitol.
- b) Glucuronic acid.
- c) Dihydroxyacetone.
- d) Glycerol.

24. Glycerol is a:

- a) Glycoside.
- b) Deoxysugar.
- c) Sugar alcohol.
- d) Protein.

25. As regards glucose, one of the following is not correct:

- a) It is aldohexoses
- b) It is disaccharide.
- c) It has asymmetric carbon atom.
- d) It has mirror image isomers.

26. As regards glucuronic acid one of the following is not correct

- a) It is a sugar acid.
- b) Derived from glucose.
- c) By hydrolysis gives glucose.
- d) Enters in GAGs formation

27. D-glyceraldehyde and L-Glyceraldehyde are:

- a) Epimers.
- b) Hexoses.
- c) Anomers
- d) Enantiomers

28. The ketose sugar is

- a) Glyceraldehyde
- b) Ribose
- c) Erythrose
- d) Dihydroxyacetone

29. All the following contain asymmetric carbon atoms except:

- a) Glucose.
- b) Ribose.
- c) Dihydroxyacetone.
- d) Fructose.

30. All the following are disaccharides except:

- a) Isomaltose.
- b) Maltose.
- c) Aggrecan.
- d) Sucrose.

31. The polysaccharide which is used as anticoagulant is:

- a) Heparin.
- b) Glycogen.
- c) Cellulose.
- d) Heparan sulfate.

32. D-Glucose and D-Fructose are:

- a) Epimers.
- b) Hexoses.
- c) Aldoses.
- d) Disaccharides

33. One of the following is a polysaccharide:

- a) Isomaltose.
- b) Lactose.
- c) Aggrecan.
- d) Sucrose.

34. As regard sucrose all of the following is right except:

- a) It is reducing disaccharide.
- b) Hydrolysed into glucose and fructose.
- c) It has free anomeric carbon.
- d) A and C.

35. The ketose sugars are all of the following except:

- a) Glyceraldehyde
- b) Ribulose
- c) Erythrulose
- d) Dihydroxyacetone

36. All the following are homopolysaccharides except:

- a) Starch.
- b) Hyaluronic acid.
- c) Cellulose.
- d) Glycogen.

37. A carbohydrate formed by β 1-4 galactosidic linkages is

- a) Glycogen
- b) Cellulose
- c) Lactose
- d) Inulin

38. A disaccharide made up of two glucose units is:

- a) Sucrose
- b) Maltose
- c) Lactose
- d) Dextrin

39. A carbohydrate found only in milk:

- a) Glucose
 - b) Galactose
 - c) Lactose
 - d) Maltose
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40. A heteropolysaccharide among the following is :

- a) Inulin
- b) Cellulose
- c) Heparin
- d) Dextrin

41. Sugar alcohol derived from galactose is:

- a) Sorbitol.
- b) Mannitol
- c) Dulcitol.
- d) Ribitol

42. One of the following polysaccharides is not easily digested:

- a) Starch.
- b) Glycogen.
- c) Cellulose.
- d) Dextrin

43. The mother compound of all aldoses is:

- a) Dihydroxyacetone
- b) Glyceraldehyde
- c) Ribose
- d) Erythrose

44. The simplest ketose is:

- a) Erythrulose.
- b) Ribulose.
- c) Dihydroxyacetone
- d) Fructose

45. Fructose and Mannose are:

- a) Anomers
- b) Aldose-ketose isomers
- c) Epimers
- d) Enantiomers

46. Dulcitol is the alcohol of

- a) Glucose
- b) Galactose
- c) Mannose
- d) Glyceraldehyde

47. Mannitol is a

- a) Sugar acid
- b) Amino sugar
- c) Sugar alcohol
- d) Deoxysugar

48. A sugar alcohol is

- Ribose
- Ribitol
- Ribulose
- Deoxy ribose

49. Reduction turns monosaccharides into

- Sugar acid
- Deoxysugar
- Amino sugar
- Sugar alcohol

50. Keratan sulfate is:

- Homopolysaccharide
- Anticoagulant
- Important for cell-cell interaction
- Important for transparency of the cornea

MCQ Answers

1-c	2-b	3-b	4-b	5-c	6-c	7-c	8-a	9-a	10-a
11-d	12-c	13-c	14-b	15-a	16-c	17-c	18-b	19-b	20-b
21-c	22-b	23-c	24-c	25-b	26-c	27-d	28-d	29-c	30-c
31-a	32-b	33-c	34-d	35-a	36-b	37-c	38-b	39-c	40-c
41-c	42-c	43-b	44-c	45-b	46-b	47-c	48-b	49-d	50-d

II- Match each of the following carbohydrates with its appropriate description:

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|--------------------|---|
| 1. Heparin | a) Non- reducing disaccharide |
| 2. Starch | b) Is present in the structure of DNA. |
| 3. Cellulose | c) Is important for transparency of the cornea. |
| 4. Sucrose | d) Is an anticoagulant |
| 5. Keratan sulfate | e) Ketose |
| 6. Deoxyribose | f) Sugar alcohol of glucose |
| | g) Is present in the structure of RNA. |
| 7. Lactose | h) Aldose |
| 8. Sorbitol | i) Milk sugar |
| 9. Dulcitol | j) Prevents constipation |
| 10. Fructose | k) Grape sugar |
| 11. Galactose | l) Sugar alcohol of mannose |
| | m) Storage form of carbohydrates in plants. |
| | n) Sugar alcohol of galactose |