



- 1) The chemical name for table sugar is _____ and it is a _____.
 - a. lactose; monosaccharide
 - b. lactose; disaccharide
 - c. sucrose; monosaccharide
 - d. sucrose; disaccharide

- 2) Which is not a similarity between glycogen and amylopectin?
 - a. They each contain about 6000 glucose residues.
 - b. Each has one reducing end and many nonreducing ends.
 - c. Each is highly branched.
 - d. Each has branches of similar chain length.

- 3) Amylose differs from amylopectin in that amylose
 - a. has different monomers than amylopectin.
 - b. has more glucose residues than amylopectin.
 - c. is highly branched and amylopectin is not.
 - d. forms a helix and no branch points.

- 4) The elasticity and resistance to compression of connective tissue is due to:
 - a. the branching of the glycosaminoglycans there.
 - b. the glycosidic linkage to the serine of proteins in the glycosaminoglycans.
 - c. the carboxyl and sulfated groups in the glycosaminoglycans.
 - d. the rigid structure of the glycosaminoglycans.

- 5) The compounds α -D-fructofuranose and β -D-fructofuranose are _____.
 - a. enantiomers
 - b. mutamers
 - c. anomers
 - d. conformational isomers

- 6) Which is a difference between maltose and cellobiose?
 - a. One is in cellulose and the other in starch.
 - b. One is linear and the other is branched.
 - c. The glycosidic bond is different.
 - d. The subunit sugars are not glucose for both.

- 7) Cellulose is not highly branched because it:
- does not have a polysaccharide backbone.
 - it does not have α -(1 \rightarrow 6) linkages.
 - it does not have β -(1 \rightarrow 4) linkages.
 - it is insoluble in water.
- 8) Which statement is true about chitin?
- It is not found in insect and crustacean shells.
 - It is not found in fungi cell walls.
 - It is composed of N-acetylglucosamine subunits.
 - It is not composed of linear fibrils like cellulose.
- 9) In solution α -D-glucopyranose and β -D-glucopyranose _____.
- rapidly polymerize to form a heteropolymer
 - can never exist together
 - form a racemic mixture
 - form an equilibrium mixture
- 10) A non-reducing sugar is
- sucrose
 - lactose
 - maltose
 - glucose
- 11) In which of the following cell types the outer membrane contains carbohydrate polymers cross-linked by short peptides?
- bacterial cells
 - plant cells
 - animal cells
 - red blood cells
- 12) Blood groups on the erythrocyte membrane contain sphingosine, fatty acid, and a carbohydrate. Which of the following statements is CORRECT?
- the blood group antigens differ in the type of the carbohydrate
 - the blood group antigens differ in the type of the fatty acid
 - the blood group antigens differ in the type of the sphingosine
 - all the blood group antigens have the same chemical structure

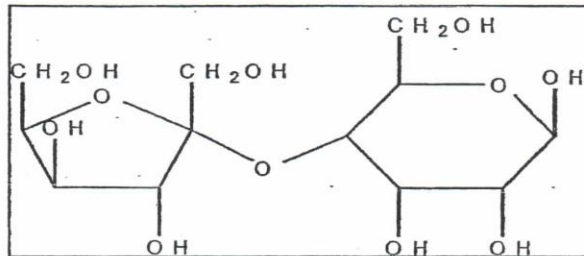
- 13) Sucrose is a disaccharide which on hydrolysis gives
- one molecule of glucose and one molecule of galactose
 - two molecules of glucose
 - one molecule of glucose and one molecule of fructose
 - two molecules of fructose
- 14) Which of the following statements is TRUE for D-glucose
- it exists mainly in cyclic form having alpha- and beta-forms
 - it differs from the L-glucose in the orientation of the hydroxyl group at carbon number 1
 - the difference between the alpha- and beta- forms is in the orientation of the OH group at carbon number 5
 - it is ketohexose
- 15) The glycosidic linkage beta(1-->4) is present in
- cellulose
 - amylose
 - glycogen
 - amyopectin
- 16) Glycogen and amylose are structurally similar in that they both
- have beta(1→4) and beta(1→6) glycosidic bonds.
 - have alpha(1→4) glycosidic bonds.
 - have only alpha(1→6) glycosidic bonds.
 - have the same degree of branching
- 17) A homopolysaccharide that is found in insects is:
- Glycogen.
 - Chitin.
 - Cellulose.
 - Starch
- 18) Monosaccharides, such as ribose, fructose, glucose, and mannose differ significantly in all of the followings EXCEPT in:
- the number of their enantiomers .
 - the positions of their carbonyl groups.
 - their diastereomeric configurations.
 - their number of carbon atoms

- 19) The glycosaminoglycan that contains an alpha (1→4) linkage is
- chondroitin sulfate
 - dermatan sulfate
 - heparin
 - keratan sulfate
- 20) Hydrolysis of maltose will yield _____.
- glucose and galactose
 - fructose and glucose
 - glucose and mannose
 - glucose only
- 21) Reaction of aldehyde with alcohol produces
- hemiketal
 - hemiacetal
 - carboxylic acid
 - full ketal
- 22) What type of bond links the monomers of a polysaccharide?
- glucotide bond
 - phosphate ester bond
 - peptide bond
 - glycosidic bond
- 23) Which of the following pairs are energy-storage polymers
- starch and glycogen
 - starch and pectin
 - cellulose and chitin
 - cellulose and glycogen
- 24) Which of the following blood group substances contain an extra alpha-galactose residue at the non-reducing end?
- blood group A
 - blood group B
 - blood group O
 - blood groups do not contain this molecule

- 25) Which of the following statements is CORRECT?
- amylose forms a blue color with iodine
 - both amylose and cellulose form a blue color with iodine
 - both amylose and cellulose form helical structure
 - amylopectin is a linear molecule
- 26) Which of the following statements is TRUE for D-glucose
- it exists mainly in an open chain form having alpha- and beta-forms
 - it differs from the L-glucose in the orientation of the hydroxyl group at carbon number 1
 - the difference between the alpha- and beta- forms is in the orientation of the OH group at carbon number 1
 - it is ketohexose
- 27) The glycosidic linkage beta(1→4) is present in
- chitin
 - amylose
 - glycogen
 - amylopectin
- 28) Cellulose fibers resemble ____ in proteins; whereas alpha-amylose is similar to ____.
- alpha-helices; beta-sheets.
 - beta-sheets; alpha-helices.
 - beta-turns; coiled-coils.
 - alpha-helices; beta-turns.
- 29) The glycosaminoglycan that acts as a common anticoagulant is
- chondroitin sulfate
 - dermatan sulfate
 - heparin
 - keratan sulfate
- 30) Which of the following pair of monosaccharides are epimers ?
- D-Glucose and D-Mannose.
 - D-Galactose and D-Mannose
 - D-Erythrose and L-erythrose
 - D-Glucose and D-fructose

- 31) A reducing sugar is one that
- contains a $\beta(1 \rightarrow 1)$ link.
 - has a free hemiacetal group.
 - can reduce Cu^{2+} but not Ag^+ .
 - makes you lose weight.
- 32) Cellulose is not digested by humans because we lack the enzyme that hydrolyzes
- $\alpha(1 \rightarrow 4)$ glycosidic bonds.
 - $\alpha(1 \rightarrow 6)$ glycosidic bonds.
 - $\beta(1 \rightarrow 4)$ glycosidic bonds.
 - long-chain polysaccharides.
- 33) Which of the following artificial sweeteners is not a carbohydrate?
- Sucralose.
 - Aspartame.
 - Saccharine.
 - Cyclamate.
- 34) A linear homopolysaccharide with the residues linked in $\beta(1 \rightarrow 4)$ glycosidic bonds is:
- Glycogen.
 - Chitin.
 - Amylose.
 - Amylopectin.
- 35) A monosaccharide is
- a compound with one carbonyl group and two or more hydroxyl groups
 - a compound with one hydroxyl group and two or more carbonyl groups
 - an aromatic aldehyde
 - an aromatic ketone

36) Which of the following best describes the glycosidic bond in the disaccharide shown:



- a. $\alpha(1-4)$
- b. $\beta(1-4)$
- c. $\alpha(2-4)$
- d. $\beta(2-4)$

37) Maltose consists of the following two monosaccharides:

- a. Galactose and mannose.
- b. Glucose and glucose.
- c. Fructose and glucose.
- d. Galactose and Glucose

38) A major difference between amylose and amylopectin is that

- a. amylose is connected by $\alpha(1-4)$ bonds and amylopectin is connected by $\beta(1-4)$ bonds.
- b. amylose is branched and amylopectin is not.
- c. amylopectin is branched and amylose is linear.
- d. each is composed of different types of sugar residues.

39) Glycogen is

- a. polysaccharide storage polymer found in plants
- b. a linear polysaccharide
- c. a highly branched polysaccharide found in animals
- d. a synthetic sugar substitute

- 40) Chitin, which forms the exoskeletons of insects, is composed of
- $\alpha(1-4)$ linked N-acetylglucosamine residues
 - $\beta(1-4)$ linked N-acetylglucosamine residues
 - $\alpha(1-4)$ linked glucose residues
 - $\beta(1-4)$ linked glucose residues
- 41) Which of the following pairs are structural polymers
- starch and glycogen
 - starch and pectin
 - cellulose and chitin
 - cellulose and glycogen
- 42) The molecule of the highest branching is
- glycogen
 - amylose
 - amylopectin
 - chitin
- 43) Sucrose is a disaccharide which on hydrolysis gives
- one molecule of glucose and one molecule of galactose
 - two molecules of glucose
 - one molecule of glucose and one molecule of fructose
 - two molecules of fructose
- 44) Which is CORRECT about naturally occurring monosaccharides?
- The L-isomers predominate.
 - The D-isomers predominate.
 - The L and D-isomers occur in equal ratios.
 - The ratio of L and D-isomers varies widely depending on the source.
- 45) Glucose in the open chain has:
- Two chiral carbons
 - Three chiral carbons
 - Four chiral carbons
 - Five chiral carbons



- 46) Which of the following statements is NOT CORRECT for sucrose and lactose?
- Both are disaccharides
 - Both contain glucose
 - Sucrose contain fructose and lactose contain galactose
 - Sucrose is reducing sugar while lactose is not
- 47) Glucose in cyclic form has:
- Two chiral carbons
 - Three chiral carbons
 - Four chiral carbons
 - Five chiral carbons
- 48) Which of the following statements is CORRECT for sucrose and lactose?
- Both are reducing sugars
 - Both contain glucose
 - Sucrose contain galactose and lactose contain fructose
 - Sucrose is reducing sugar while lactose is not



Question	Answer	Question	Answer
1	D	25	A
2	D	26	C
3	D	27	A
4	C	28	B
5	C	29	C
6	C	30	D
7	B	31	B
8	C	32	C
9	D	33	B
10	A	34	B
11	A	35	A
12	A	36	C
13	C	37	B
14	A	38	C
15	A	39	C
16	B	40	B
17	B	41	C
18	A	42	A
19	C	43	C
20	D	44	B
21	B	45	C
22	D	46	D
23	A	47	D
24	B	48	B

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