

LEC 10 Q –METABOLISIM:

- 1. What is the functional group characteristic of aldoses?**
 - A) Ketone
 - B) Alcohol
 - C) Aldehyde
 - D) Ether
- 2. Which type of carbohydrate consists of multiple monosaccharide units?**
 - A) Disaccharides
 - B) Oligosaccharides
 - C) Polysaccharides
 - D) Monosaccharides
- 3. What is the maximum number of chiral centers in a hexose?**
 - A) 4
 - B) 5
 - C) 6
 - D) 3
- 4. Which monosaccharide is classified as a pentose?**
 - A) Glucose
 - B) Ribose
 - C) Fructose
 - D) Mannose
- 5. What distinguishes enantiomers from other isomers?**
 - A) Same molecular formula
 - B) Different connectivity
 - C) Non-superimposable mirror images
 - D) Same connectivity, different orientations
- 6. In the D and L classification of sugars, what indicates a D-sugar?**
 - A) Hydroxyl group on the left at the last chiral center
 - B) Hydroxyl group on the right at the last chiral center
 - C) No chiral centers
 - D) Presence of a ketone group
- 7. Which of the following is an epimer?**
 - A) Glucose and Galactose
 - B) Glucose and Fructose
 - C) Mannose and Galactose
 - D) Ribose and Glucose

8. **What type of bond is formed between two monosaccharides in a disaccharide?**
- A) Ionic bond
 - B) Hydrogen bond
 - C) Glycosidic bond
 - D) Peptide bond
9. **Which enzyme is responsible for the digestion of lactose?**
- A) Maltase
 - B) Sucrase
 - C) Lactase
 - D) Isomaltase
10. **What is the primary function of pancreatic α -amylase?**
- A) Digest proteins
 - B) Digest fats
 - C) Hydrolyze α -1,4 glycosidic bonds in starch
 - D) Hydrolyze β -1,4 glycosidic bonds

Answers

- 1. C
- 2. C
- 3. C
- 4. B
- 5. C
- 6. B
- 7. C
- 8. C
- 9. C
- 10. C

1. **What is the primary difference between aldoses and ketoses?**
- A) Number of carbon atoms
 - B) Presence of an aldehyde or ketone functional group
 - C) Type of glycosidic bond formed
 - D) Solubility in water
2. **Which monosaccharide is an example of a hexose?**
- A) Ribose
 - B) Erythrose
 - C) Fructose
 - D) Glyceraldehyde
3. **How many chiral centers does glucose have?**

- A) 4
- B) 5
- C) 6
- D) 3

4. **Which enzyme is responsible for breaking down sucrose?**

- A) Lactase
- B) Sucrase
- C) Maltase
- D) Isomaltase

5. **What type of reaction forms a glycosidic bond in disaccharides?**

- A) Hydrolysis
- B) Dehydration
- C) Oxidation
- D) Reduction

6. **What is the major site of carbohydrate digestion?**

- A) Stomach
- B) Small intestine
- C) Mouth
- D) Large intestine

7. **Which transporter is primarily responsible for glucose uptake in insulin-sensitive tissues?**

- A) GLUT1
- B) GLUT2
- C) GLUT4
- D) GLUT5

8. **What condition results from a deficiency of lactase?**

- A) Hyperglycemia
- B) Lactose Intolerance
- C) Glycogen Storage Disease
- D) Diabetes Mellitus

9. **What is the main product of starch digestion?**

- A) Glucose
- B) Dextrins
- C) Fructose
- D) Galactose

10. **Which type of carbohydrate is characterized by its branched structure?**

- A) Amylose
- B) Glycogen
- C) Cellulose
- D) Starch

Answers

- 1. B
- 2. C
- 3. B
- 4. B
- 5. B
- 6. B
- 7. C
- 8. B
- 9. B
- 10. B

11. **Which type of bond is specifically cleaved by maltase?**

- A) α -1,6 glycosidic bond
- B) β -1,4 glycosidic bond
- C) α -1,4 glycosidic bond
- D) Peptide bond

12. **In carbohydrate metabolism, what is the primary role of the enzyme lactase?**

- A) Hydrolyzing maltose
- B) Hydrolyzing sucrose
- C) Hydrolyzing lactose
- D) Hydrolyzing starch

13. **What is the result of sucrose-isomaltase deficiency?**

- A) Accumulation of starch
- B) Accumulation of lactose
- C) Accumulation of sucrose and isomaltose
- D) Accumulation of glucose

14. **Which GLUT transporter is primarily found in the brain?**

- A) GLUT1
- B) GLUT2
- C) GLUT3
- D) GLUT4

15. **What type of carbohydrate consists of repeating monosaccharide units linked by glycosidic bonds?**

- A) Oligosaccharides
- B) Polysaccharides
- C) Monosaccharides
- D) Disaccharides

16. What is the main consequence of lactose intolerance?

- A) Increased energy production
- B) Decreased absorption of glucose
- C) Osmotic diarrhea
- D) Enhanced fat metabolism

17. How is glucose transported from the intestinal lumen into enterocytes?

- A) Passive diffusion
- B) Facilitated diffusion via GLUT transporters
- C) Active transport via SGLT
- D) Endocytosis

18. What distinguishes diastereomers from enantiomers?

- A) They differ at all chiral centers
- B) They differ at one chiral center
- C) They have the same molecular formula
- D) They are superimposable

19. Which sugar is not digested in the oral cavity?

- A) Starch
- B) Sucrose
- C) Lactose
- D) Cellulose

20. What is the primary product of carbohydrate digestion in the small intestine?

- A) Starch
- B) Monosaccharides
- C) Disaccharides
- D) Oligosaccharides

Answers

- 11. C
- 12. C
- 13. C
- 14. C
- 15. B
- 16. C
- 17. C

- 18. C
- 19. D
- 20. B

21. **Which of the following is a characteristic of β -anomers compared to α -anomers?**

- A) Hydroxyl group in an axial position
- B) More stable in solution
- C) Predominantly found in linear form
- D) Forms a 5-membered ring

22. **In the context of carbohydrate digestion, which enzyme is responsible for cleaving isomaltose into glucose?**

- A) Sucrase
- B) Glucoamylase
- C) Lactase
- D) Isomaltase

23. **What defines a constitutional isomer in carbohydrates?**

- A) Same connectivity, different stereochemistry
- B) Same molecular formula, different connectivity
- C) Non-superimposable mirror images
- D) Different molecular formulas but similar structure

24. **Which enzyme complex accounts for the majority of maltase activity in the intestine?**

- A) Sucrase-Isomaltase Complex
- B) Maltase-Glucoamylase Complex
- C) Lactase
- D) Pancreatic Amylase

25. **What is the physiological consequence of high levels of undigested lactose in the intestine?**

- A) Enhanced nutrient absorption
- B) Decreased osmotic pressure
- C) Increased bacterial fermentation leading to gas production
- D) Increased glucose metabolism

26. **How does insulin affect glucose transport in tissues?**

- A) It increases the activity of GLUT1
- B) It promotes the expression and translocation of GLUT4 to the cell membrane
- C) It decreases the affinity of GLUT2 for glucose
- D) It inhibits SGLT activity

27. Which of the following best describes the role of salivary α -amylase?

- A) It hydrolyzes α -1,6 glycosidic bonds in starch
- B) It initiates the digestion of proteins in the stomach
- C) It cleaves β -1,4 bonds in lactose
- D) It hydrolyzes α -1,4 glycosidic bonds in amylose and amylopectin

28. What is the structural feature that distinguishes epimers from other stereoisomers?

- A) They differ at multiple chiral centers
- B) They differ at only one chiral center
- C) They have different molecular weights
- D) They are always linear in structure

29. In patients with sucrase-isomaltase deficiency, which sugars are most likely to accumulate in the intestinal lumen?

- A) Galactose and glucose
- B) Sucrose and isomaltose
- C) Lactose and maltose
- D) Fructose and glucose

30. What type of glycosidic bond links glucose and galactose in lactose?

- A) α -1,4
- B) β -1,4
- C) α -1,2
- D) β -1,2

Answers

- 21. B
- 22. D
- 23. B
- 24. A
- 25. C
- 26. B
- 27. D
- 28. B
- 29. B
- 30. B

31. Which monosaccharide can be classified as a nonose?

- A) Galactose
- B) Ribose
- C) Neuraminic Acid
- D) Fructose

32. **In which part of the digestive system does carbohydrate digestion primarily occur?**
- A) Stomach
 - B) Duodenum
 - C) Jejunum
 - D) Colon
33. **What type of enzyme activity is primarily associated with the maltase-exoglycosidase complex?**
- A) Hydrolyzing α -1,2 bonds
 - B) Hydrolyzing both α -1,4 and α -1,6 bonds
 - C) Hydrolyzing β -1,4 bonds
 - D) Hydrolyzing α -1,1 bonds
34. **How do the chiral centers differ between aldoses and ketoses in terms of their counts?**
- A) Aldoses have one more chiral center than ketoses
 - B) Ketoses have one more chiral center than aldoses
 - C) Both have the same number of chiral centers
 - D) Aldoses and ketoses do not have chiral centers
35. **What effect does the orientation of the hydroxyl group at the anomeric carbon have on glucose stability?**
- A) The orientation does not affect stability
 - B) Equatorial orientation is more stable than axial
 - C) Axial orientation is more stable than equatorial
 - D) Both orientations are equally stable
36. **In carbohydrate metabolism, what is the role of dextrans?**
- A) They are final products of starch digestion
 - B) They serve as a source of energy during fasting
 - C) They are intermediate products formed during the breakdown of starch
 - D) They are a type of polysaccharide used for storage
37. **What distinguishes diastereomers from enantiomers in terms of stereochemistry?**
- A) Diastereomers have different connectivity; enantiomers do not
 - B) Diastereomers differ at one or more chiral centers, while enantiomers differ at all
 - C) Diastereomers are superimposable; enantiomers are not
 - D) Diastereomers are always sugars; enantiomers are not
38. **Which sugar is primarily absorbed in the intestine through a sodium-dependent cotransporter?**

- A) Fructose
- B) Galactose
- C) Sucrose
- D) Lactose

39. **What is the physiological consequence of a deficiency in maltase?**

- A) Accumulation of isomaltose
- B) Decreased glucose absorption
- C) Accumulation of maltose
- D) Increased lactate production

40. **What is the molecular mechanism of glucose's entry into muscle cells upon insulin stimulation?**

- A) Increased GLUT1 activity
- B) Increased synthesis of SGLT
- C) Enhanced translocation of GLUT4 to the plasma membrane
- D) Increased absorption of glucose in the gut

Answers

- 31. C
- 32. B
- 33. B
- 34. A
- 35. B
- 36. C
- 37. B
- 38. B
- 39. C
- 40. C

41. **What is the primary structural difference between amylose and amylopectin?**

- A) Amylose is branched; amylopectin is linear
- B) Amylose contains only α -1,4 glycosidic bonds; amylopectin contains both α -1,4 and α -1,6 bonds
- C) Amylopectin is composed of glucose and fructose; amylose is not
- D) Amylose has a higher molecular weight than amylopectin

42. **In carbohydrate metabolism, what happens during the hydrolysis of a glycosidic bond?**

- A) Water is removed, forming a bond
- B) Water is added, breaking the bond
- C) A phosphate group is added
- D) An enzyme is phosphorylated

43. **What distinguishes the physiological role of GLUT2 from GLUT4?**
- A) GLUT2 is insulin-sensitive; GLUT4 is not
 - B) GLUT2 functions primarily in the liver; GLUT4 functions in muscle and adipose tissues
 - C) GLUT2 transports only fructose; GLUT4 transports glucose
 - D) GLUT2 is found in neurons; GLUT4 is not
44. **What is the mechanism of action for the enzyme lactase?**
- A) It cleaves α -1,2 bonds in sucrose
 - B) It hydrolyzes β -1,4 bonds in lactose
 - C) It hydrolyzes α -1,4 bonds in maltose
 - D) It cleaves α -1,6 bonds in isomaltose
45. **What is a common result of both sucrase-isomaltase and lactase deficiencies?**
- A) Decreased enzyme production
 - B) Accumulation of undigested disaccharides leading to osmotic diarrhea
 - C) Increased absorption of glucose
 - D) Enhanced fermentation of sugars in the intestine
46. **Which of the following statements about chiral centers is true?**
- A) Each chiral center has two possible configurations
 - B) Aldoses have fewer chiral centers than ketoses
 - C) Stereoisomers differ only in connectivity, not configuration
 - D) Chiral centers do not affect the optical activity of a molecule
47. **Which compound is primarily responsible for the osmotic effect in lactose intolerance?**
- A) Glucose
 - B) Galactose
 - C) Lactose
 - D) Lactate
48. **What is the clinical significance of the Na^+ -dependent glucose cotransporter (SGLT) in the kidney?**
- A) It promotes glucose excretion in urine
 - B) It reabsorbs glucose from urine back into the bloodstream
 - C) It transports fructose
 - D) It regulates insulin secretion
49. **In terms of enzyme specificity, how do glycosidases differ?**
- A) They can cleave any glycosidic bond
 - B) Each glycosidase is specific to certain types of glycosidic bonds

- C) They only work in the presence of high pH
- D) They are all interchangeable in function

50. What is the primary substrate for the enzyme glucoamylase?

- A) Sucrose
- B) Lactose
- C) Dextrins and maltose
- D) Cellulose

Answers

- 41. B
- 42. B
- 43. B
- 44. B
- 45. B
- 46. A
- 47. C
- 48. B
- 49. B
- 50. C

51. What type of glycosidic bond is formed between the glucose units in maltose?

- A) β -1,4
- B) α -1,4
- C) α -1,2
- D) β -1,2

52. In the context of carbohydrate absorption, what is the role of GLUT5?

- A) It transports glucose and galactose
- B) It is specific for fructose absorption
- C) It acts as a glucose sensor in the liver
- D) It facilitates Na^+ -dependent glucose transport

53. Which type of reaction is responsible for forming disaccharides from monosaccharides?

- A) Hydrolysis
- B) Dehydration synthesis
- C) Fermentation
- D) Oxidation

54. What occurs during the conversion of an α -anomer to a β -anomer?

- A) The ring opens and closes with the same configuration
- B) The configuration of the anomeric carbon changes, affecting stability

- C) A new carbon bond is formed
D) An epimeric relationship is established
- 55. Which of the following correctly describes the relationship between glucose and galactose?**
- A) They are constitutional isomers
B) They are enantiomers
C) They are epimers
D) They are diastereomers
- 56. What is the primary function of pancreatic α -amylase in carbohydrate digestion?**
- A) It cleaves α -1,6 bonds in branched starch
B) It hydrolyzes α -1,4 bonds in starch
C) It digests disaccharides into monosaccharides
D) It activates lactase in the small intestine
- 57. What structural characteristic of the sucrase-isomaltase complex enhances its enzymatic activity?**
- A) It consists of two distinct proteins
B) It forms a homodimer
C) It has overlapping activities due to its subunit structure
D) It is found in the cytosol of intestinal cells
- 58. How does the body manage high levels of fructose in the bloodstream?**
- A) Through the action of insulin
B) By converting it to glucose via gluconeogenesis
C) By utilizing GLUT5 for absorption
D) By storing it as glycogen
- 59. What is a primary consequence of carbohydrate malabsorption?**
- A) Increased enzyme activity in the intestine
B) Accumulation of substrates leading to fermentation
C) Enhanced absorption of other nutrients
D) Decreased intestinal motility
- 60. Which factor primarily influences the stability of an anomeric carbon's hydroxyl group?**
- A) The presence of neighboring chiral centers
B) The orientation of the hydroxyl group in the ring structure
C) The type of glycosidic bond present
D) The molecular weight of the sugar

Answers

- 51. B
- 52. B
- 53. B
- 54. B
- 55. C
- 56. B
- 57. C
- 58. A
- 59. B
- 60. B

61. **Which enzyme is responsible for the hydrolysis of lactose into its constituent monosaccharides?**

- A) Sucrase
- B) Maltase
- C) Lactase
- D) Isomaltase

62. **What is the significance of the β -anomer of glucose in biological systems?**

- A) It is less stable than the α -anomer
- B) It is primarily used in energy storage
- C) It is the predominant form in solution
- D) It cannot be utilized by metabolic pathways

63. **How do epimers differ from one another?**

- A) They have the same structural formula but different connectivity
- B) They differ in the configuration around multiple chiral centers
- C) They differ in configuration at only one specific chiral center
- D) They are always diastereomers

64. **Which carbohydrate is primarily involved in the formation of glycosidic bonds in disaccharides?**

- A) Fructose
- B) Glucose
- C) Ribose
- D) Galactose

65. **What occurs during the digestion of starch in the small intestine?**

- A) Starch is fully hydrolyzed to glucose
- B) Starch is only partially broken down into dextrans and disaccharides
- C) Starch is converted to cellulose
- D) Starch digestion is completed by gastric enzymes

66. **In terms of enzyme specificity, what distinguishes maltase from isomaltase?**
- A) Maltase can only hydrolyze α -1,6 bonds; isomaltase cannot
 - B) Maltase acts on maltose; isomaltase acts on isomaltose
 - C) Maltase has no activity on disaccharides; isomaltase does
 - D) Maltase is a membrane-bound enzyme; isomaltase is not
67. **What is the primary result of the action of salivary α -amylase on starch?**
- A) It converts starch into monosaccharides
 - B) It hydrolyzes α -1,4 linkages, producing oligosaccharides
 - C) It digests cellulose into glucose
 - D) It forms glycosidic bonds
68. **In which compartment of the intestinal cell do the majority of GLUT transporters function?**
- A) Mitochondria
 - B) Cytosol
 - C) Plasma membrane
 - D) Nucleus
69. **What is the primary mode of absorption for glucose in the intestinal epithelium?**
- A) Passive diffusion
 - B) Na^+ -independent facilitated diffusion
 - C) Na^+ -dependent active transport
 - D) Endocytosis
70. **What type of bond connects the two glucose molecules in isomaltose?**
- A) β -1,4
 - B) α -1,4
 - C) α -1,6
 - D) α -1,2

Answers

- 61. C
- 62. C
- 63. C
- 64. B
- 65. B
- 66. B
- 67. B
- 68. C
- 69. C
- 70. C

71. **What is the main role of the enzyme trehalase in carbohydrate metabolism?**
- A) Hydrolyzing sucrose
 - B) Cleaving α -1,1 bonds in trehalose
 - C) Digestion of starch
 - D) Hydrolyzing lactose
72. **Which of the following best describes the configuration of the anomeric carbon in the β -anomer of glucose?**
- A) Hydroxyl group below the plane of the ring
 - B) Hydroxyl group above the plane of the ring
 - C) Carbonyl group in the ring
 - D) Free aldehyde group in open-chain form
73. **Which factor does NOT influence the stability of anomeric forms of sugars?**
- A) Steric hindrance between substituents
 - B) Hydrogen bonding with solvent
 - C) Position of the hydroxyl group
 - D) Molecular weight of the sugar
74. **What is a primary characteristic of diastereomers compared to enantiomers?**
- A) They have identical physical properties
 - B) They differ at all chiral centers
 - C) They differ at some, but not all, chiral centers
 - D) They are always optical isomers
75. **What is the primary substrate for the enzyme glucoamylase during starch digestion?**
- A) Sucrose
 - B) Maltose
 - C) Dextrins
 - D) Lactose
76. **Which of the following carbohydrates is classified as a nonose?**
- A) Fructose
 - B) Ribose
 - C) Glucose
 - D) Neuraminic Acid
77. **What is the significance of the SGLT transporter in glucose metabolism?**

- A) It facilitates passive glucose absorption
- B) It regulates blood glucose levels postprandially
- C) It couples glucose transport with sodium ion transport, using energy
- D) It converts glucose to glycogen

78. How do the glycosidic bonds in amylopectin differ from those in amylose?

- A) Amylopectin has only α -1,4 bonds; amylose has both α -1,4 and α -1,6 bonds
- B) Amylopectin has both α -1,4 and α -1,6 bonds; amylose has only α -1,4 bonds
- C) Amylose contains only β bonds; amylopectin contains α bonds
- D) Both have the same types of bonds but differ in chain length

79. Which characteristic is true of the enzyme maltase?

- A) It can digest sucrose
- B) It specifically hydrolyzes isomaltose
- C) It hydrolyzes α -1,4 bonds in maltose
- D) It functions in the stomach

80. What metabolic pathway primarily utilizes D-sugars over L-sugars?

- A) Glycolysis
- B) Gluconeogenesis
- C) Pentose phosphate pathway
- D) Citric acid cycle

Answers

- 71. B
- 72. B
- 73. D
- 74. C
- 75. C
- 76. D
- 77. C
- 78. B
- 79. C
- 80. A

81. Which enzyme specifically hydrolyzes the β -1,4 glycosidic bonds in lactose?

- A) Maltase
- B) Isomaltase
- C) Lactase
- D) Sucrase

82. What type of carbohydrate is characterized by the presence of multiple hydroxyl groups and a carbonyl group?

- A) Ketone
- B) Aldose
- C) Disaccharide
- D) Polysaccharide

83. **Which statement best describes the impact of insulin on GLUT4 transporters?**

- A) Insulin increases the expression of GLUT4 on the cell surface
- B) Insulin decreases glucose uptake in muscle cells
- C) Insulin inhibits the activity of GLUT4
- D) Insulin has no effect on GLUT4 transporters

84. **What distinguishes constitutional isomers from stereoisomers in carbohydrates?**

- A) They have the same molecular formula but different connectivity
- B) They have different molecular formulas
- C) They differ in spatial arrangement but not connectivity
- D) They are always optical isomers

85. **In carbohydrate metabolism, what does the term "epimer" specifically refer to?**

- A) Isomers that differ in the position of the carbonyl group
- B) Isomers that differ at only one chiral center
- C) Isomers that are mirror images of each other
- D) Isomers that differ at multiple chiral centers

86. **What is the primary product of the action of pancreatic α -amylase on starch?**

- A) Monosaccharides
- B) Dextrins and disaccharides
- C) Sucrose
- D) Cellulose

87. **What is the significance of the anomeric carbon in the formation of cyclic sugars?**

- A) It remains unchanged during the reaction
- B) It can form glycosidic bonds with other sugars
- C) It defines the sugar as either an aldose or ketose
- D) It is always the first carbon in the chain

88. **What defines the stereochemistry of D and L sugars?**

- A) The configuration of the highest-numbered chiral carbon
- B) The configuration of the anomeric carbon

- C) The overall molecular weight
D) The position of the carbonyl group
- 89. Which enzyme complex accounts for the majority of maltase activity in the intestinal mucosa?**
- A) Glucoamylase
B) Sucrase-Isomaltase complex
C) Lactase
D) Trehalase
- 90. What condition can result from a deficiency in disaccharidase enzymes?**
- A) Hyperglycemia
B) Lactose intolerance
C) Glycogen storage disease
D) Ketoacidosis

Answers

81. C
82. B
83. A
84. A
85. B
86. B
87. B
88. A
89. B
90. B
- 91. Which type of glycosidic bond is formed between two glucose molecules in the formation of isomaltose?**
- A) α -1,4
B) β -1,4
C) α -1,6
D) β -1,2
- 92. In the context of carbohydrate metabolism, what is the primary consequence of high blood glucose levels in terms of GLUT2 function?**
- A) It decreases insulin secretion
B) It increases glucose uptake by the liver
C) It causes the conversion of glucose to glycogen
D) It leads to glucose excretion in urine
- 93. Which enzyme is particularly important for the digestion of resistant starch and is not affected by acidic pH?**

- A) Salivary α -amylase
- B) Pancreatic α -amylase
- C) Sucrase
- D) Glucoamylase

94. **What defines a sugar as a polyhydroxy ketone?**

- A) Presence of an aldehyde group
- B) Presence of a carbonyl group and multiple hydroxyl groups
- C) Presence of only one chiral center
- D) Presence of anomeric carbon

95. **In what manner does the configuration of D-glucose differ from that of L-glucose at the last chiral center?**

- A) The hydroxyl group is oriented upward in D-glucose
- B) The carbonyl group is located on a different carbon
- C) D-glucose has more chiral centers than L-glucose
- D) L-glucose cannot be metabolized by human enzymes

96. **Which of the following statements is true regarding the stability of β -anomers compared to α -anomers?**

- A) β -anomers are less stable due to steric hindrance
- B) α -anomers are predominantly found in solution
- C) β -anomers have a hydroxyl group in the axial position
- D) β -anomers are generally more stable due to equatorial positioning of substituents

97. **What role does the enzyme isomaltase play in carbohydrate digestion?**

- A) Hydrolyzes β -1,4 bonds in lactose
- B) Hydrolyzes α -1,6 bonds in isomaltose
- C) Converts glucose to glycogen
- D) Hydrolyzes α -1,2 bonds in sucrose

98. **Which structural feature differentiates galactose from glucose?**

- A) The position of the carbonyl group
- B) The configuration at the fourth carbon
- C) The number of chiral centers
- D) The type of glycosidic bonds formed

99. **What is the primary pathway for the absorption of fructose in the intestinal epithelium?**

- A) Active transport through SGLT
- B) Facilitated diffusion via GLUT5
- C) Direct uptake via endocytosis
- D) Passive diffusion across the lipid bilayer

100. **What clinical condition is directly related to a deficiency in the enzyme sucrase-isomaltase?**

- A) Celiac disease
- B) Galactosemia
- C) Sucrase-isomaltase deficiency syndrome
- D) Lactose intolerance

Answers

- 91. C
- 92. B
- 93. D
- 94. B
- 95. A
- 96. D
- 97. B
- 98. B
- 99. B
- 100. C

Done By: Khaled Ghanayem