BIOCHEMISTRY
Test Bank 2

بسم الله الرحمن الرحيم

Carbohydrates
Lectures 5,6 and 7

QUIZ LINK
SCAN or TAP

Written by:
Mahmood Alabsi
Edited by:
Muthanna Khalil

فريق دوبامين العلمي - THE SCIENTIFIC TEAM OF DOPAMINE
APPROVED
0501113
TB2 (L5 – L7)

This file is divided into 3 parts

- 17 direct MCQ questions
- Some unanswered conceptual questions to ensure understanding.

  Feel free to use external sources if you felt you do not know the answers.
- 20 rather higher-level MCQ questions

Q1: Inulin, Hyaluronic acid and Cerebrosides are in order:

A. Polysaccharides, Mucopolysaccharides, Glycolipids
B. Glycolipids, Polysaccharides, Glycosides
C. Glycoproteins, Mucopolysaccharides, Polysaccharides
D. Polysaccharides, Mucopolysaccharides, Glycosides
E. Glycosides, Nucleic acids, Glycolipids

Answer: A

Q2: The basic formula and the least possible amount of hydroxyl groups for a monosaccharide, in order:

A. (CH_2O_2) , 3
B. (C_2H_2O) , 4
C. (CH_2O_2) , 2
D. (CH_2O) , 2
E. (CH_3O) , 4

Answer: D

Q3: Which option is **not** correct?

A. Isomers are Stereoisomers and Constitutional isomers
B. All Diastereomers are epimers
C. Constitutional isomers have the same molecular formula
D. Enantiomers are non-superimposable
E. Stereoisomers differ in the three-dimensional orientations of their atoms in space

Answer: B

Q4: Given that we have 16 aldohexoses and 4 aldotetroses how many enantiomers does D-galactose have :

A. 20
B. 2
C. 4
D. 8
E. 1

Answer: E

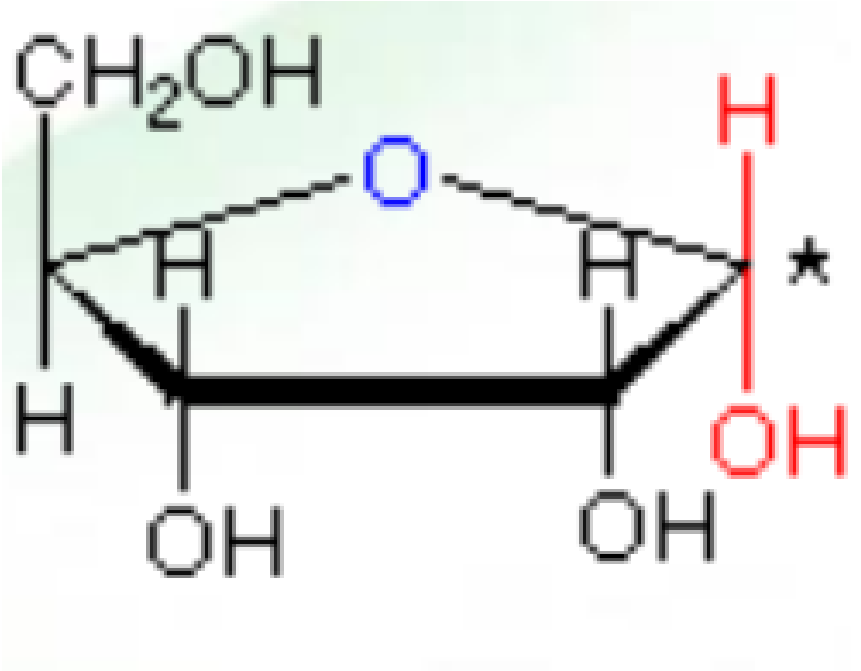
Q5: Choose the correct statement:

A. A Pyranose is a sugar, but a furanose is not
B. Furan is (5 carbon + 1 oxygen) ring
C. Pyran is (6 carbon) ring
D. Pyran is (5 carbon + 1 oxygen) ring
E. 2 or more are correct

Answer: D

Q6: The appropriate name for this structure:

A. mannose
B. ribose
C. galactose
D. glucose
E. fructose



Answer: B

Q7: Which is not a sugar alcohol?

A. Myo-inositol
B. glycerol
C. D-mannitol
D. D-sorbitol
E. All are sugar alcohols

Answer: E

Q8: The correct statement regarding a glycosidic linkage:

A. The anomeric carbon is part of it
B. Can be found between 2 monosaccharides
C. Only in glucose
D. Can be on any carbon in the sugar
E. 2 or more are correct

Answer: E

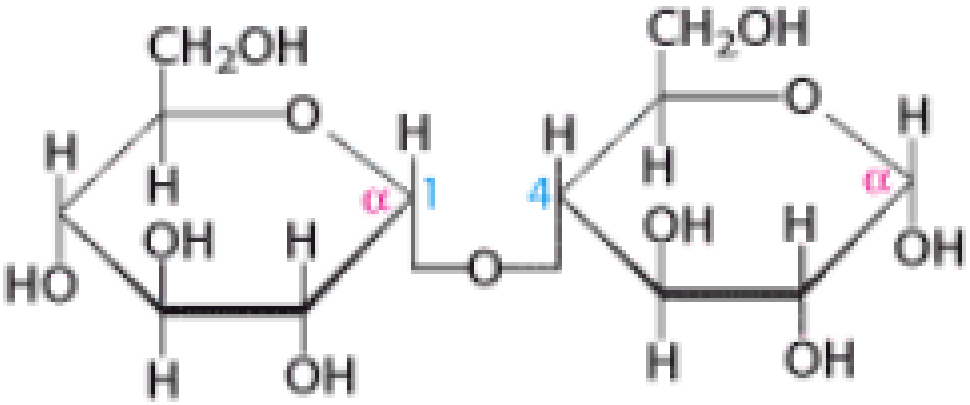
Q9: The synthesizing enzyme of glycosidic linkage and the reaction type are, in order:

A. Glycosyltranferase , condensation reaction
B. Tranferase , hydrogenation reaction
C. Glucose , condensation reaction
D. 2 or more are correct
E. None of the above

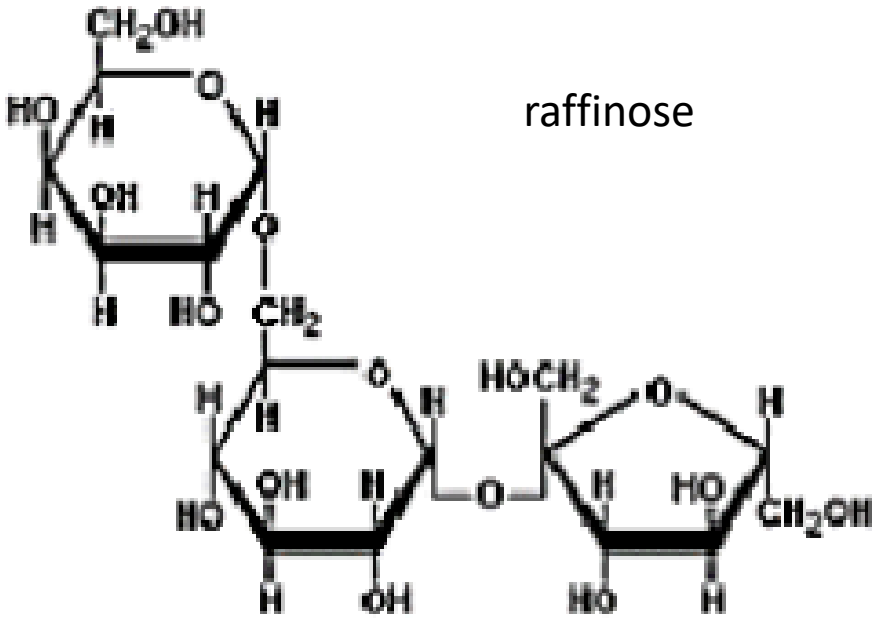
Answer: A

Q10: Maltose and Raffinose are:

A. Both are oligosaccharides
B. Only one of them has glucose
C. Formed basically from lipids
D. 2 or more are correct
E. All are incorrect



Maltose
(α-D-Glucopyranosyl-(1→4)-α-D-glucopyranose



raffinose

Answer: E

Q11: Choose the correct statement:

A. Raffinose is found in beans and vegetables
B. Digoxin (cancer chemotherapy)
C. Raffinose is broken down by Beta-galactosidase
D. Streptomycin (cardiovascular disease)
E. All are incorrect

Answer: A

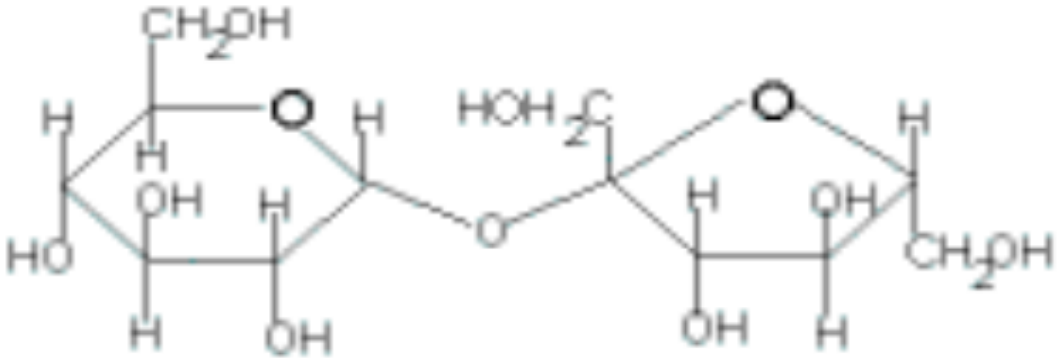
Q12: Lactose and Sucrose are considered as:

A. Monosaccharides
B. Enantiomers
C. Types of residues
D. Isomers
E. Acid and base (in order)

Answer: D

Q13: The linkage in sucrose is:

A. Not a glycosidic linkage
B. Between 2 glucose molecules
C. Between 2 anomeric carbons
D. Links (1 , 4) carbons
E. 2 or more are correct



Answer: C

Q14: Regarding starch percent of (amylose : amylopectin) approximately:

A. 25% : 75%
B. 50% : 50%
C. 75% : 25%
D. 10% : 90%
E. 90% : 10%

Answer: D

Q15: The importance of branching in polysaccharides:

A. Reduce water solubility
B. Makes for easier glucose extraction
C. Not important in polysaccharide
D. Doesn’t affect water solubility
E. Branching best affects cellulose-made structures

Answer: B

Q16: Where can we find chitin mainly?

A. In mammals
B. In insects
C. In our bodies
D. In plants
E. None of the above

Answer: B

Q17: Which of the following is not a GAG?

A. Hyaluronate
B. Chondroitin sulfate
C. Keratan sulfate
D. Heparin
E. All are GAG’s

Answer: E

Here are some questions to check your knowledge. Perhaps they are beneficial for you.

What is chirality in carbon atoms?

What is the difference between enantiomers and diasteriomers?

How do aldehydes and ketones differ from each other ?

How to determine the anomer carbon?

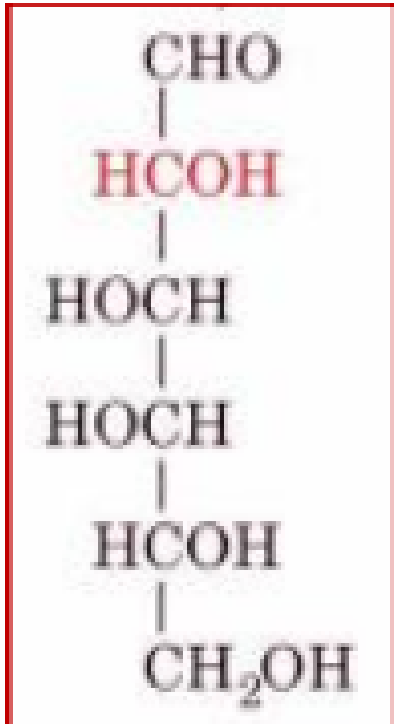
What is a residue? And what is mutarotation?

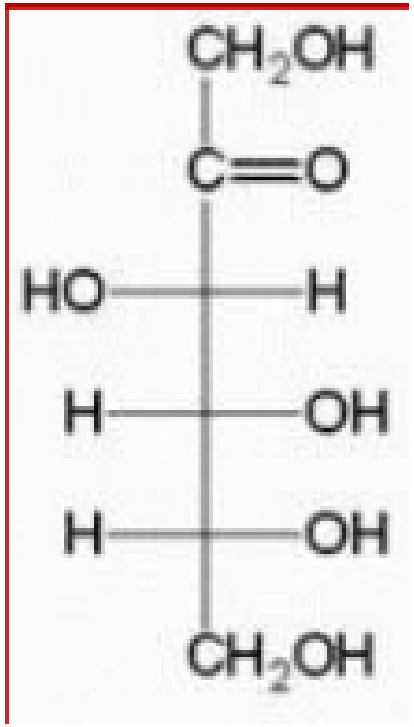
Where are pectin and cellulose found?

How many total isomers does an aldohexose have? (total isomers include stereo + constitutional)

Q18: What are the names of these 2 molecules in order?

A. Fructose , Ketose
B. Galactose , Fructose
C. Tetrose , Mannose
D. Pentose , Ribose .
E. Glucose , Mannose

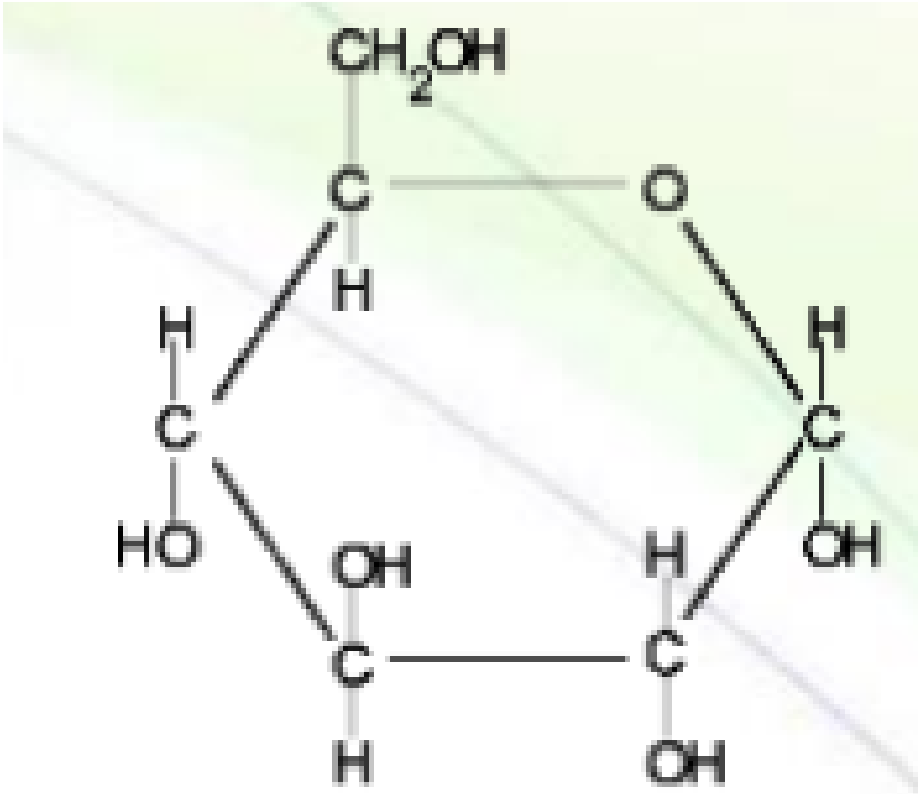




Answer: B

Q19: The following molecule:

A. Found mostly in soft drinks and desserts
B. Found in every monosaccharide
C. It is the blood sugar
D. 2 options are correct
E. This molecule doesn't exist



Answer: C

Q20: How many diastereomers does an aldoheptose have?

A. 16
B. 30
C. 31
D. 32
E. 1

Answer: B

Q21: What is the relation between (D- glyceraldehyde) and (L-glyceraldehyde)?

A. Epimers
B. Constitutional isomers
C. Diastereomers
D. Enantiomers
E. None of the above

Answer: D

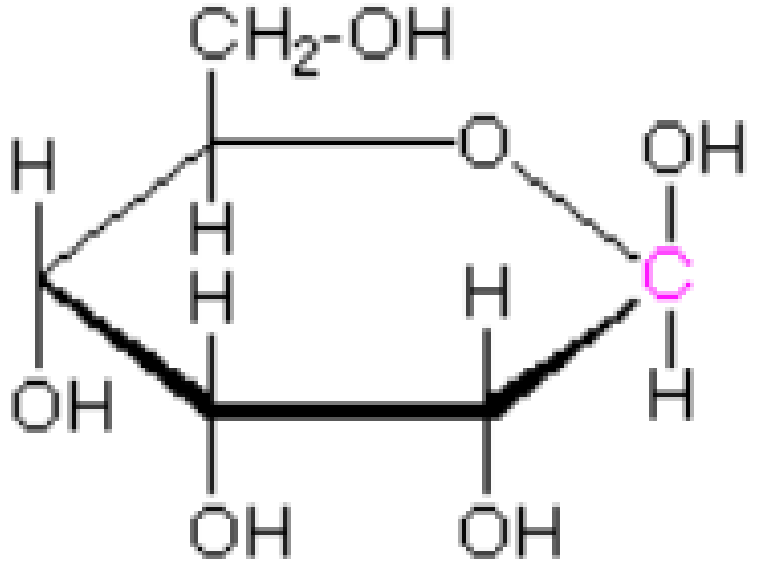
Q22: How many chiral centers (out of 4 total) in the linear structure are identical between D-mannose and L-glucose?

A. 0
B. 1
C. 2
D. 3
E. 4

Answer: B

Q23: What is the appropriate name for this molecule?

A. Alpha-D-glucose
B. Alpha-L-glucose
C. Beta-D-allofuranose
D. Beta-D-allopyranose
E. Alpha-D-galactopyranose



Hint: exclude answers

Answer: D

Q24: Choose the correct statement:

A. Ketone can be oxidized directly by a weak oxidizing agent
B. Oxidizing 6^{th} carbon in glucose only gives Alpha glucose
C. 1^{st} carbon in glucose can't be oxidized
D. Glucuronate is an enantiomer to gluconate
E. All are incorrect

Answer: E

Q25: Choose the correct statement:

A. L-fucose is an enantiomer to L-6-deoxygalactose
B. Fucose is derived from both galactose and glucose
C. D-fucose is a fully oxidized sugar
D. Fucose is found in glycoproteins
E. 2 or more are correct

Answer: D

Q26: Choose the correct statement:

A. (N) attached to anomeric carbon makes an amino sugar
B. Carbon and Oxygen can’t bond to the anomeric carbon
C. Amino sugars can’t have amide bond in its structure
D. Glycosidic is the bond between carbon and hydroxyl group
E. All are incorrect

Answer: E

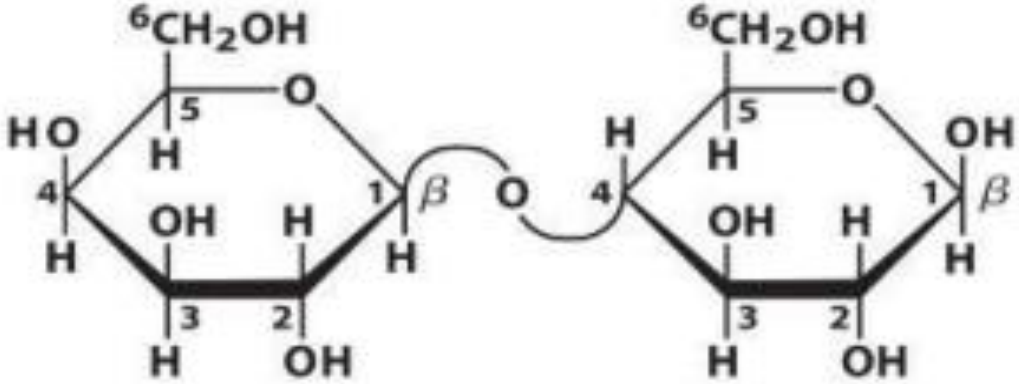
Q27: All the following are reducing sugars **except**:

A. Galactopyranose
B. Fructofuranose
C. Maltose
D. Lactose
E. Sucrose

Answer: E

Q28: The appropriate name for this structure:

A. β-D-galactopyranosyl-(1→4)-β-D-glucopyranose
B. α-D-galactopyranosyl-(1→4)-α-D-glucopyranose
C. α-D-maltopyranosyl-(1→4)-α-D-glucopyranose
D. α-D-galactopyranosyl-(1→6)-α-D-glucopyranose
E. β-D-galactopyranose-(1→4)-β-D-glucopyranosyl



Answer: A

Q29: All the following are correct except:

A. Lactulose is used in treating constipation
B. Galactosemia is a state involves hydroxy-sugar accumulated in cells
C. Lactose is formed by condensation of galactose and glucose
D. Galactosemia resulting in severe retardation It also causes cataract
E. All the following are correct

Answer: E

Q30: One of the following is correct:

A. Lactase deficiency causes lactose intolerance
B. Lactulose is a deficiency of the lactulase
C. Sucralose is important for DNA development
D. 2 or more are correct
E. All are incorrect

Answer: A

Q31: Choose the correct statement:

A. Amylose and amylopectin are forms of glycogen
B. Amylose is branched and amylopectin is not branched
C. Dextran is a structural polysaccharide
D. Branch points occur about every 25 residues in glycogen and about every 10 residues in amylopectin
E. Dextran is an α-(1-6)-D-glucose with branched chains

Answer: E

Q32: Proteoglycans:

A. Lubricants
B. Mediate adhesion of cells to the ECM
C. Bind cytokines
D. Have a higher content of sugars than proteins
E. All are correct

Answer: E

Q33: Sucrose consists of:

A. Only fructose and lactose
B. Only mannose and galactose
C. Only glucose and galactose
D. Only fructose and glucose
E. Only lactose and maltose

Answer: D

Q34: Which of the following is true about glycoproteins?

A. Sugars with some protein attachments
B. Carbs in glycoprotein are attached to the protein only through oxygen
C. N-glycosidic linkage attaches aspirin
D. O-glycosidic bonds link sugars to both serine and threonine
E. None of the above

Answer: D

Q35: Protein-linked sugars are important in all the following **except**:

A. Protein folding
B. Protein targeting
C. Cell-cell communication
D. Decreasing protein half-life
E. Signaling

Answer: D

Q36: If a blood cell membrane has both N-acetylgalactosamine and galactose sugar attachments, what is the blood type?

A. AB
B. B
C. A+
D. A-
E. O

Answer: A

Q37: Salic acid is:

A. Also called N-acetylgalactosamine
B. The internal residue of oligosaccharide chains of glycoproteins and glycolipids
C. Precursor for most sugars
D. Also called N-acetylneuraminate
E. None of them is correct

Answer: D