

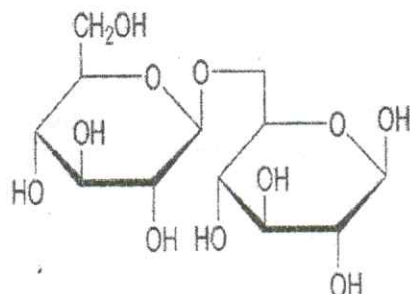
Question 1: Which of the following pairs are C4 epimers -?

- A) D-glucose / D-mannose ; B) D-glucose / D-galactose ; C) D-glucose / L-glucose ; D) D-glucose / D-fructose

Question 2: In a pyranose derived from a D-sugar, the α anomer is characterized by:

- A) The anomeric OH is oriented in the same direction as the CH_2OH at C-5.
 B) The anomeric OH oriented on the opposite side (Trans) to the CH_2OH at C-5.
 C) The anomeric OH bonded to a non-anomeric asymmetric carbon.
 D) The CH_2OH at C-5 is always oriented towards the top of the plane of the molecule.

Question 3: The full name of the following disaccharide is:



- A) α -D-glucopyranosyl(1 \rightarrow 1)- α -D-glucopyranoside.
 B) β -D-gulopyranosyl (1 \rightarrow 6)- α -D-galactopyranose.
 C) α -D-mannopyranosyl(1 \rightarrow 1)- α -D-glucopyranoside.
 D) β -D-gulopyranosyl (1 \rightarrow 6)-D-glucopyranose.

Question 4: Give the correct definition

- A) Amylose is a polymer of α -D-glucose and maltose is a glucose dimer.
 B) Amylopectin is branched in α (1 \rightarrow 4) and sucrose is a Glu-Fru dimer.
 C) Lactose is composed of galactose and glucose linked in α (1 \rightarrow 1).
 D) Glycogen is less branched than the amylopectin of starch.

Question 5: Determine the saponification value (I_s) of $\text{C}_{16}\text{H}_{32}\text{O}_2$ (X) and $\text{C}_{16}\text{H}_{30}\text{O}_2$ (Y) given:
 Molar mass of KOH = 56g/mol.

- A) I_s X=220.50 AND I_s Y=200.00 ; B) I_s X=280.75 AND I_s Y= 284.55
 C) I_s X=218.75 AND I_s Y=220.50 ; D) I_s X =226.35 AND I_s Y=124.40

Question 6: Correctly associate the stereochemical relationship for each pair: 1. D-Glucose/L-Glucose; 2. D-Glucose/D-mannose and 3. D-glucose/D-Allose.

- A) 1 = enantiomers; 2 = epimers; 3 = diastereomers; B) 1 = epimers; 2 = enantiomers; 3 = enantiomers
 C) 1 = diastereomers; 2 = epimers; 3 = enantiomers; D) 1 = enantiomers; 2 = diastereomers; 3 = epimers

Question 7: Which of the following reactions are irreversible?

- A) G6P isomerase, Aldolase, Triose-Phosphate isomerase.
 B) 3-PGA dehydrogenase, Phosphoglycerate kinase, enolase.
 C) Hexokinase, Phosphofructokinase-I, pyruvate kinase
 D) Pyruvate kinase, aldolase, Glucokinase.

Question 8: The net energy yield in ATP and NADH from glycolysis is:

- A) 4 ATP and 2 NADH; B) 2 ATP and 2 NADH; C) 8 ATP and 4 NADH; D) 2 ATP and no NADH

Question 9: Acetyl-CoA labeled with ^{14}C on both carbon atoms enters the citric acid ring. α -Ketoglutaric acid will be labeled:

- A) On both carboxyl groups ; B) On one carboxyl group and on the ketone carbon ; C) On C4 and C5; D) On a single carboxyl group.

