MONOSACCHARIDES – TOPIC TEST 1

QUESTION 1
Monosaccharides contain the elements:

A. Carbon, hydrogen and oxygen
B. Carbon and hydrogen only
C. Carbon, oxygen and nitrogen
D. Carbon, hydrogen and nitrogen

QUESTION 2
Fructose has the general formula:

A. $C_x(H_2O)_y$
B. $C_6H_{12}O_8$
C. CH_2O_x
D. $C_{12}H_{23}O_{11}$

QUESTION 3
Which of the following statements about monosaccharide's is incorrect?

A. They are highly soluble
B. They contain the hydroxyl functional group
C. They are all have ring structures containing six carbons
D. They can act as strong reductants

QUESTION 4
In monosaccharide's, the ratio of C:H is approximately

A. 1:1
B. 1:2
C. 1:4
D. 1:6

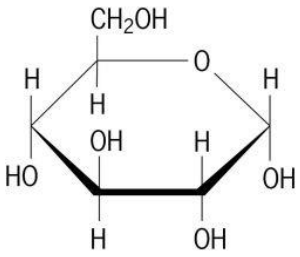
QUESTION 5
Monosaccharide's

A. Can be hydrolysed into carbon dioxide and water
B. Are structures containing many sugar units
C. Combine to form polysaccharides via esterification reactions
D. Are oxidised to release energy in the body

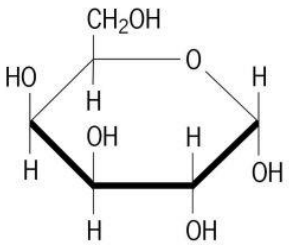
QUESTION 6
Glucose has the same molecular formula as galactose.

(a) What is the formula?

(b) Using the diagrams given below, explain why the two compounds have different names. Label any functional groups.



Glucose



Galactose

(c) What class of compound is formed from the joining of a unit of glucose with one of galactose?

(d) What type of reaction would be undertaken in the formation of the new compound?

(e) Draw the new compound and circle the *new* functional group that has formed.

Solution

QUESTION 7
Glucose ($C_6H_{12}O_6$) and galactose ($C_6H_{12}O_6$) are both very soluble in water. With the aid of a diagram explain why.

Solution

SOLUTIONS

QUESTION 1 Answer is A

QUESTION 2 Answer is A

QUESTION 3 Answer is C

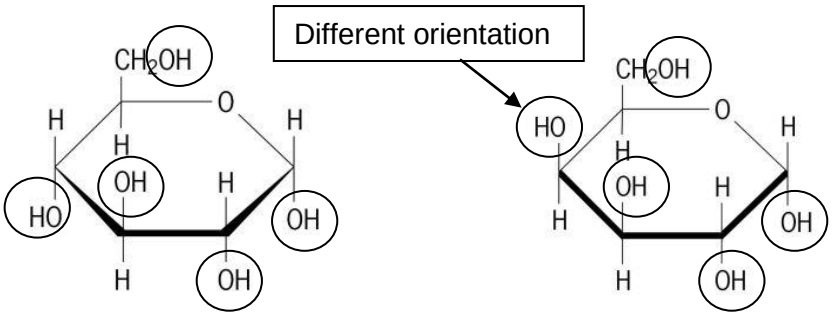
QUESTION 4 Answer is B

QUESTION 5 Answer is D

QUESTION 6

(a) $C_6H_{12}O_6$

(b) One of the hydroxyl groups is orientated differently (the group on carbon 4).

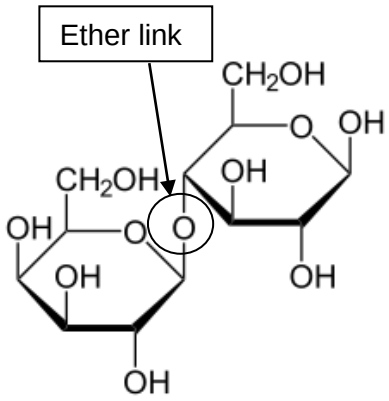


Hydroxyl functional groups circled.

(c) Disaccharide

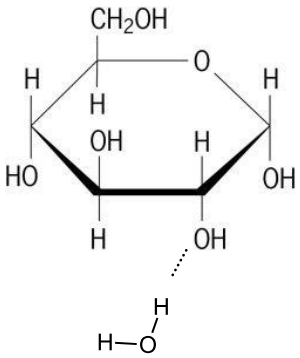
(d) Condensation

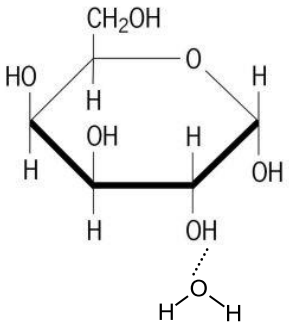
(e)



Galactose + Glucose → Lactose

QUESTION 7





Both glucose and galactose have multiple sites where they are able to hydrogen bond with water. This makes them very soluble.