

CARBOHYDRATES 1.

16-05-2020 Lecture-2 Deg-II (H&S)

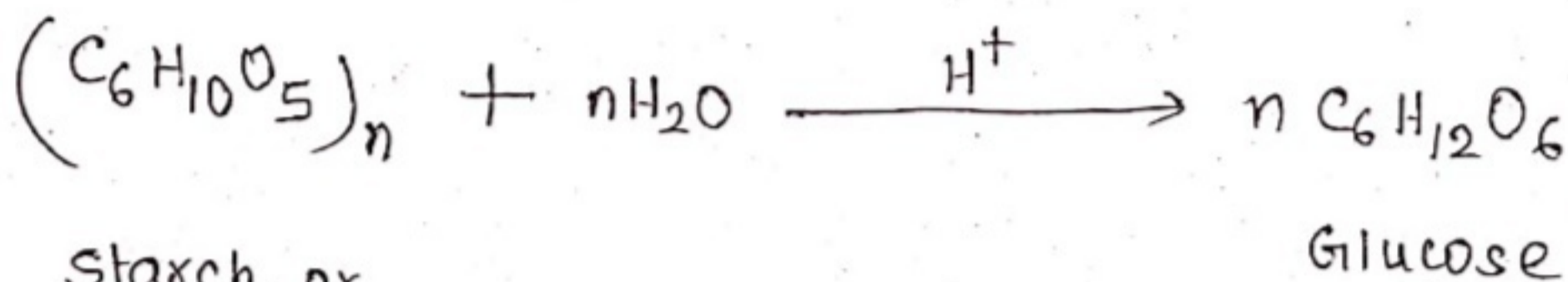
Topic - Classification Continued..

3. POLYSACCHARIDES

The polysaccharides are carbohydrates of high molecular weight which yield many monosaccharide molecules on hydrolysis.

eg; starch, cellulose, Glycogen etc.

molecular formula : $(C_6H_{10}O_5)_n$



starch, or
cellulose or
Glycogen

* The monosaccharides and oligosaccharides are crystalline solids, soluble in water and sweet to taste. They are collectively known as sugars.

* The polysaccharides, are amorphous solids, insoluble in water and tasteless.

They are called Non-sugars.

Carbohydrate may also be classified as either Reducing or non-reducing sugars.

* All those carbohydrates which have the ability to reduce Fehling's solution and Tollen's reagent- are known as reducing sugars while others are non-reducing sugars.

* All monosaccharide and the disaccharides other than sucrose are reducing sugars.

MONOSACCHARIDES

The monosaccharides are polyhydroxy aldehydes or polyhydroxy ketones.

Thus, two main classes of monosaccharides are

① Aldose

contain an aldehyde
 $(-\overset{\text{O}}{\parallel}{\text{C}}-\text{H})$

② Ketose

contain a ketone group
 $(\overset{\text{O}}{\parallel}{\text{C}})$

* The Aldoses and Ketoses are further divided into sub-groups on the basis of the number of carbon atoms in their molecules,

as, trioses have 3 carbons

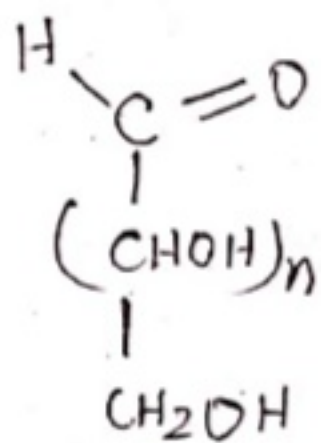
tetroses have 4 carbons

Pentoses have 5 carbons

Hexoses have 6 carbons, etc.

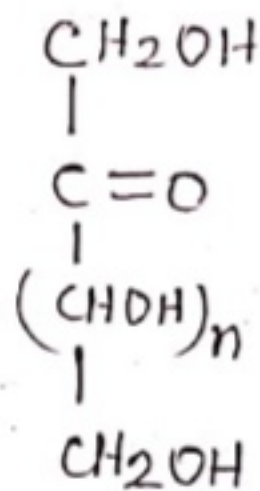
Thus monosaccharides are generally referred to as aldotrioses, aldo tetroses, aldopentoses, ketohexoses, aldo hexoses etc.

The Aldoses and Ketoses may be represented by the general formula -



$n = 1, 2, 3, 4, 5$

Aldoses



$(n = 0, 1, 2, 3, 4)$

Ketoses

continued..