Carbohydrates

- Monosaccharides
- Disaccharides
- Oligosaccharides
- Polysaccharides

Monosaccharides-Aldoses:

Aldohexoses: Glucose ,Galactose and Mannose

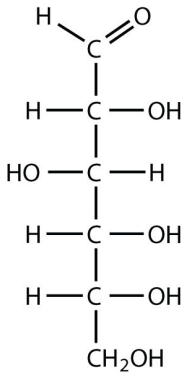
Aldopentoses: Ribose and Deoxyribose

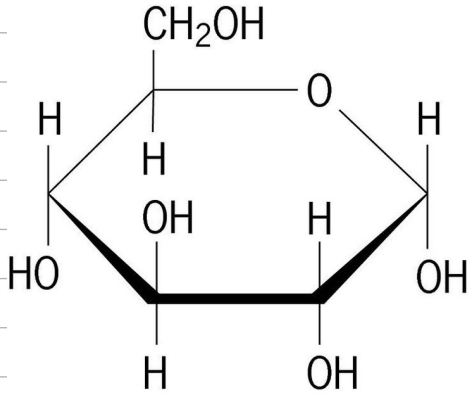
Aldotetroses: Erythrose and Threose

Aldotriose: Glyceraldehyde

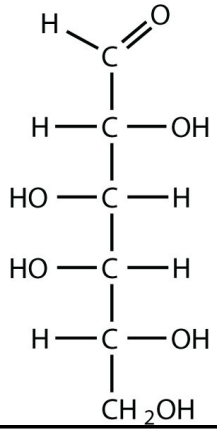
Sugar type : → Open chain form : → Cyclic form :

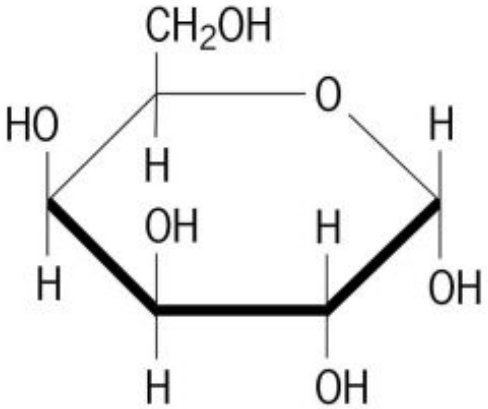
Glucose:



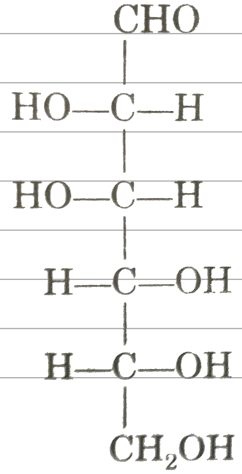


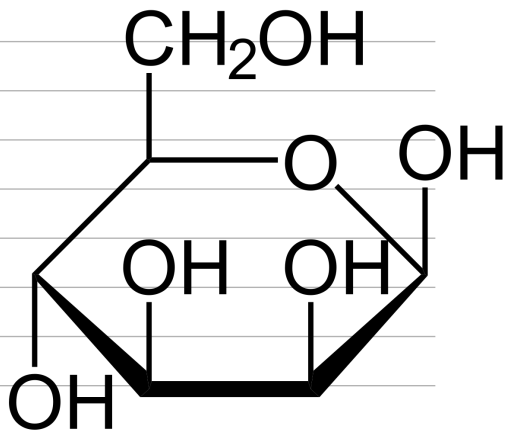
Galactose:



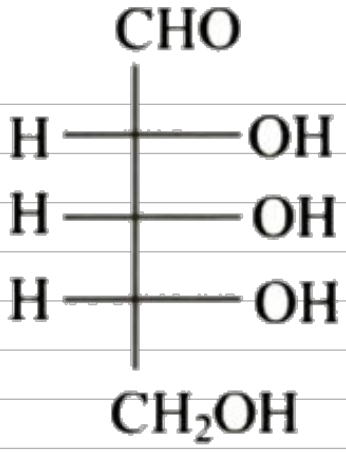


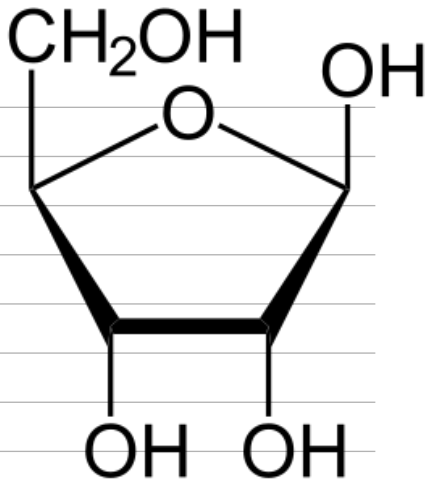
Mannose:



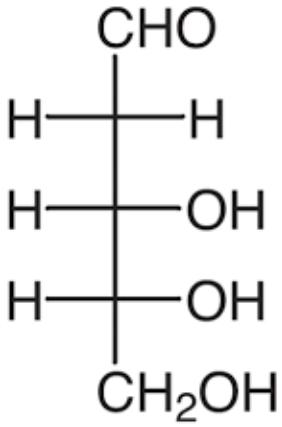


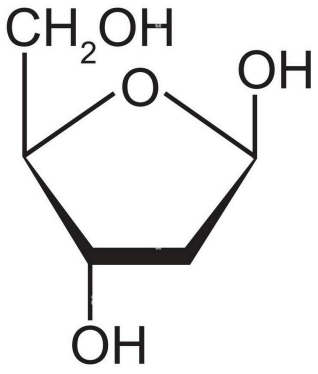
Ribose:



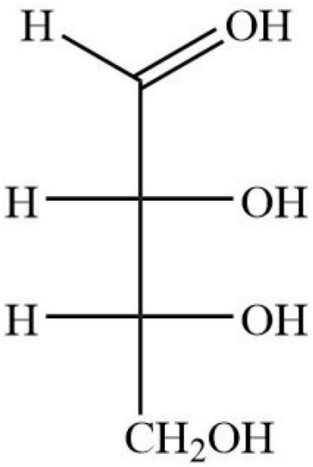


Deoxyribose:

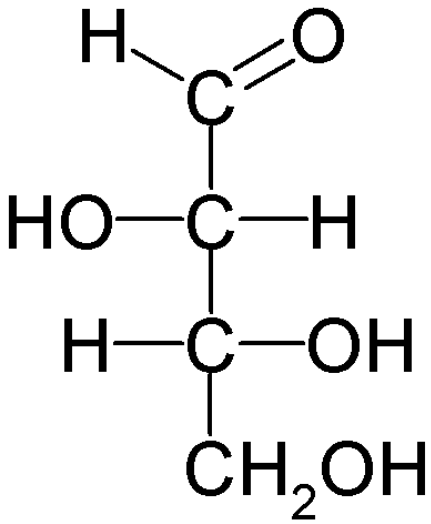




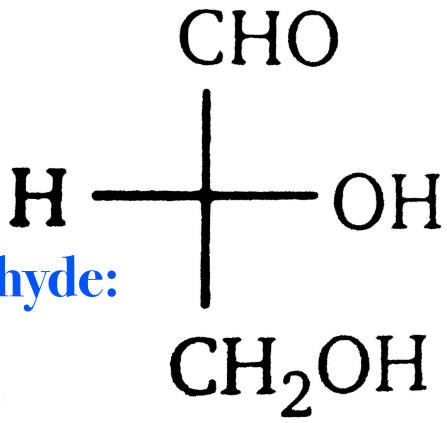
Erythrose:



Threose :



Glyceraldehyde:



Monosaccharides-Ketoses:

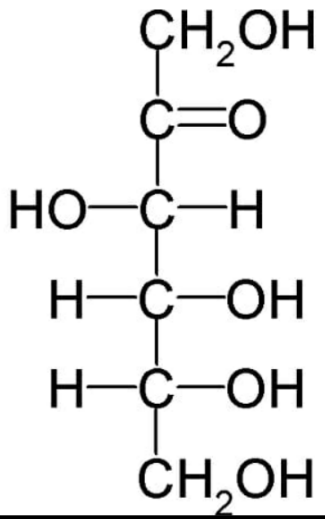
Ketotriose: Dihydroxyacetone

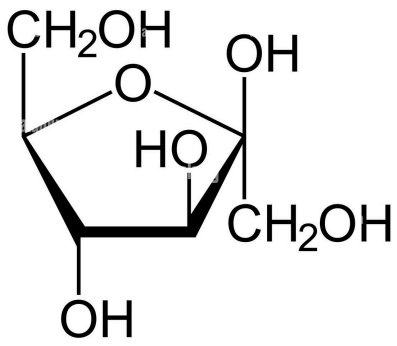
Ketopentose: Xylulose

Ketohexoses: Fructose and Sorbose

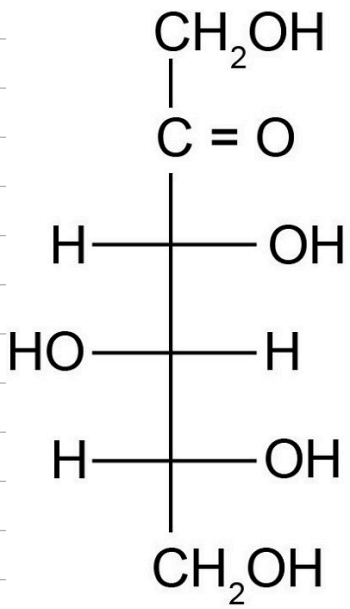
Sugar type : ⟶ Open chain form : ⟶ Cyclic form :

Fructose:

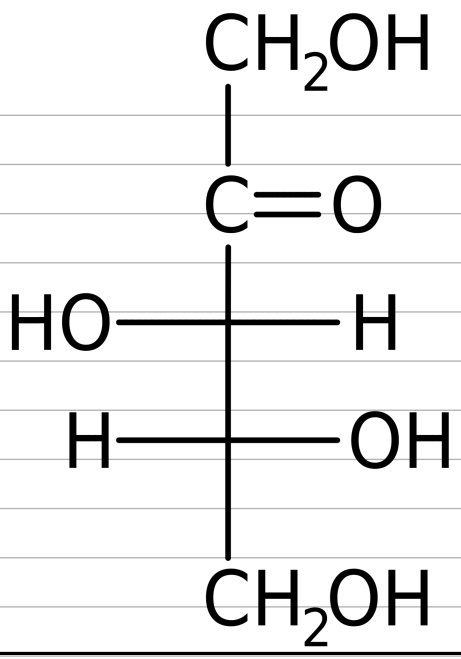




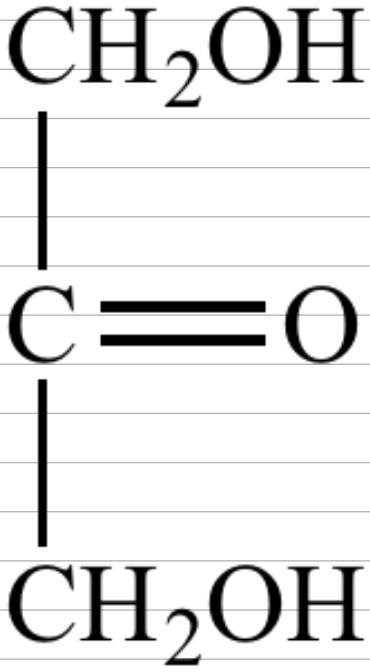
Sorbose:



Xylulose:

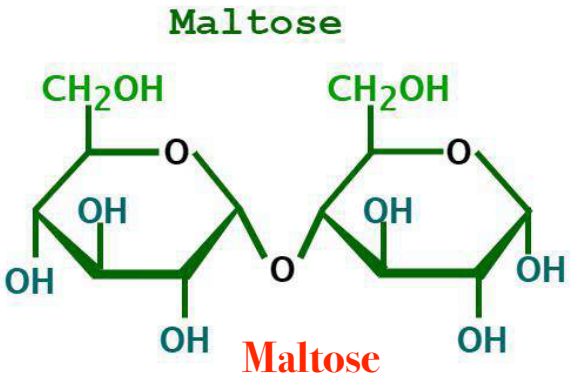


Dihydroxyacetone:



Disaccharides :

Maltose,Lactose and Sucrose.



Maltose

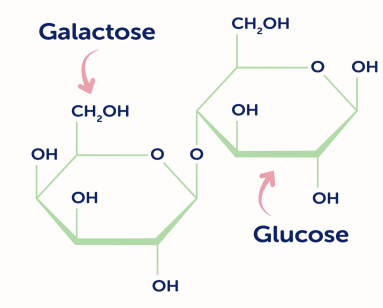
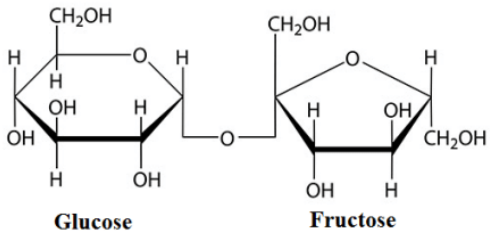


Figure 1: Lactose structure

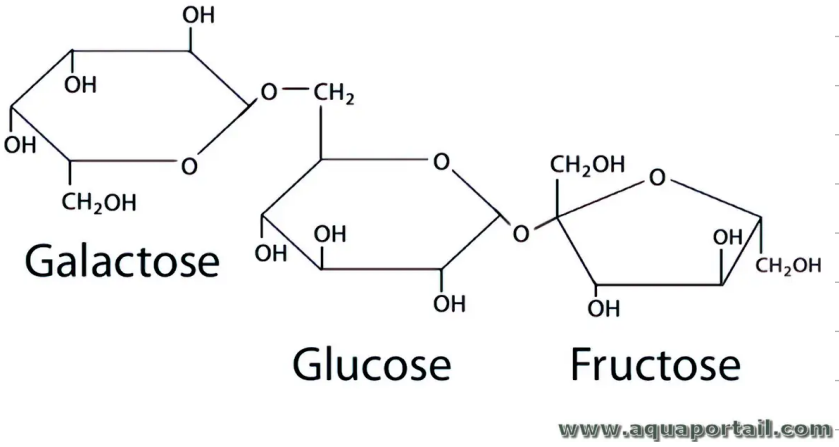
Lactose



Sucrose

Oligosaccharides:

raffinose



Polysaccharides:

Starch (Amylopectin&Amylose)
Glycogen
Dextran
→ **For energy storage Homopolysaccharides**

Cellulose
Chitin
→ **For structural support Homopolysaccharides**

Starch -------In plants
Glycogen----In animals
Cellulose----In plants

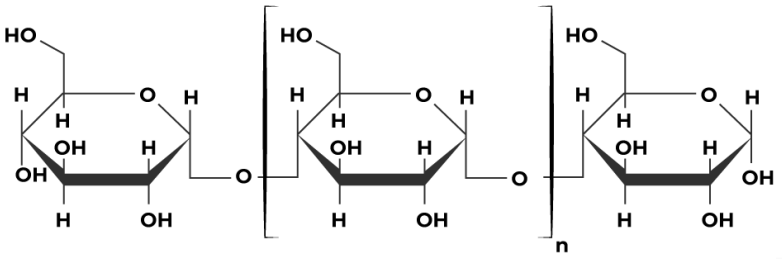
Amylose
Chitin → *Not branched*
Cellulose

Amylopectin
Glycogen → *Branched*
Dextran

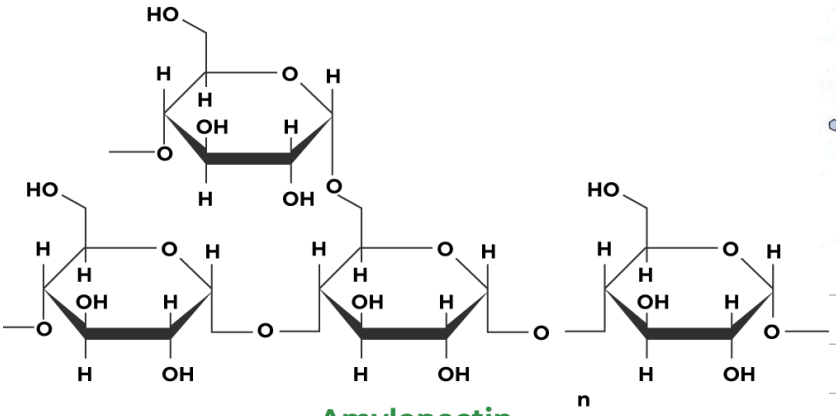
Amylopectin *:* Its glucose molecules are linked together by **Alpha -1-4 glycosidic bonds** and its branches by **Alpha-1-6 glycosidic bonds** and it is branched every **25 residues**

Glycogen : Its glucose molecules are linked together by **Alpha- 1-4 glycosidic bonds** and its branches by **Alpha -1-6 glycosidic bonds** and it is branched every **10 residues**

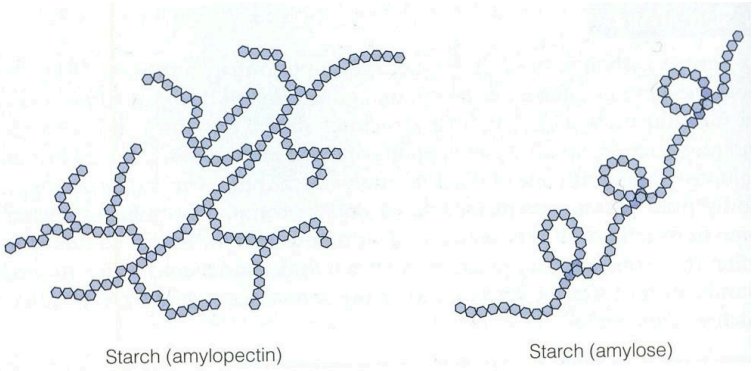
Dextran : Its glucose molecules are linked together by **Alpha-D-1-6 glycosidic bonds** and its branches by **1-3 or 1-2 or 1-4 glycosidic bonds**

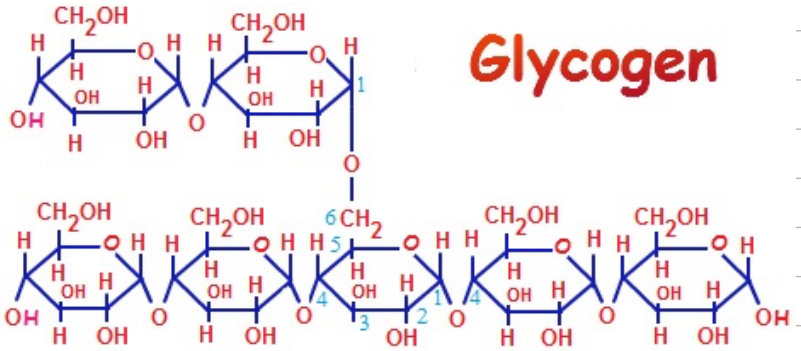


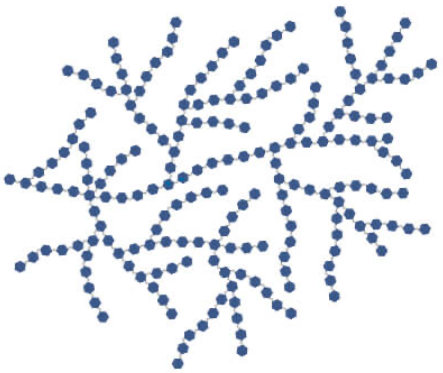
Amylose



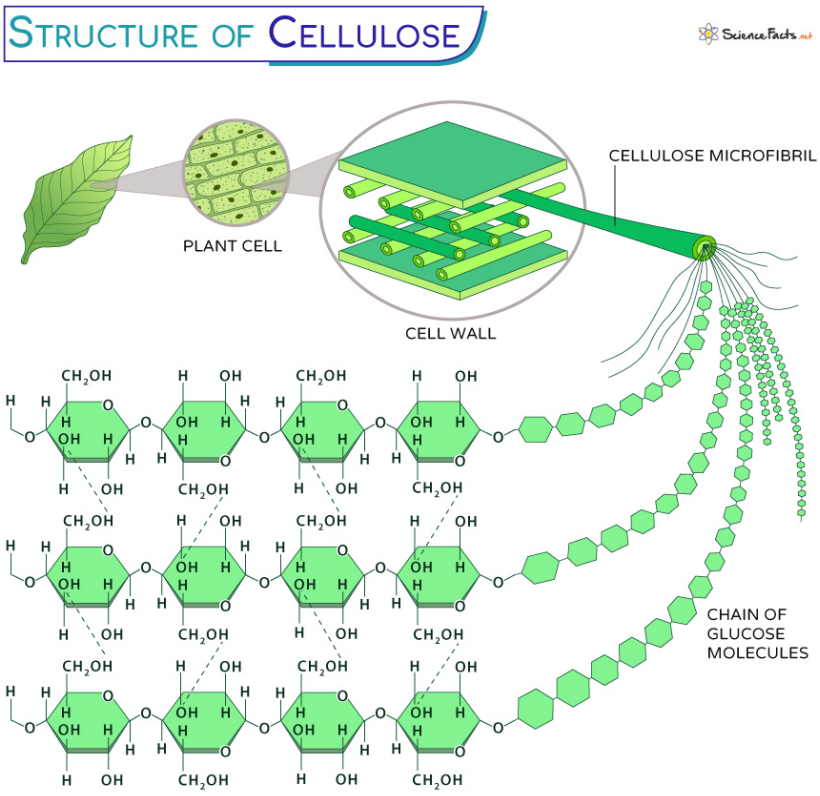
Amylopectin

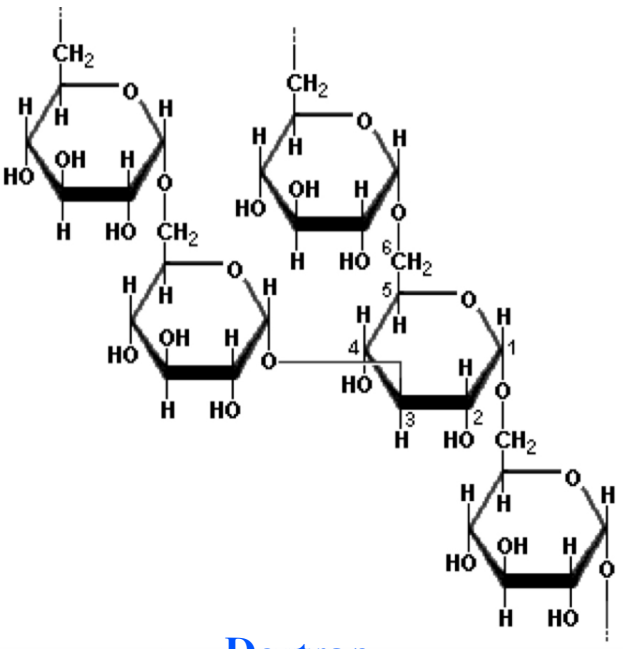






Glycogen





Dextran

(c) **Chitin**