

## Lecture-4

### Carbohydrates

#### **1. Give three examples of monosaccharides?**

**Answer:** Glucose (dextrose), fructose and galactose.

#### **2. Differentiate between aldose and ketose sugar?**

**Answer:** An aldose (glucose) has an aldehyde group; a ketose (fructose) has a ketone group. Example of aldose is glyceraldehyde, whereas for ketose, it is dihydroxyacetone. All aldoses have the CHO at the top and the CH<sub>2</sub>OH at the bottom where as all ketoses have the CH<sub>2</sub>OH at the top and a carbonyl at the second carbon

#### **3. What is Pyran and furan rings?**

**Answer:** Pyran is a six membered heterocyclic ring consisting of five carbon atoms and one oxygen atom and containing two double bonds; whereas **Furan** is a heterocyclic organic compound, consisting of a five-membered aromatic ring with four carbon atoms and one oxygen.

#### **4. Distinguish between starch and cellulose?**

**Answer:** Starch is a carbohydrate consisting of a large number of glucose units joined together by glycosidic bonds.

Cellulose is a polysaccharide consisting of a linear chain of several hundred to over ten thousand  $\beta(1\rightarrow4)$  linked D-glucose units.

**5. How lactose is different from maltose?**

**Answer:** Lactose is a disaccharide consisting of one galactose and one glucose bonded through a  $\beta$ -1 $\rightarrow$ 4 glycosidic linkage, whereas maltose is a disaccharide consisting of two glucose units joined with an  $\alpha$  (1 $\rightarrow$ 4) bond.