

D. B. College (Jaynagar) Lect. no. -16

B.Sc (II) Hons Carbohydrate

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COMPETITION WINDOW

- ◆ Both glucose and fructose reduce Tollen's reagent, Fehling's solution, Benedict's solution etc.
- ◆ All monosaccharides and reducing disaccharides (maltose, lactose etc.) react with three molecules of $C_6H_5NHNH_2$ to form Crystalline osazones which are used for their identification and characterization. Further all monosaccharides which differ in configuration at C_1 and C_2 give the same osazone, i.e. glucose and fructose.
- ◆ Both Starch and Cellulose are Condensation Polymers of glucose. Whereas glucose is a Polymer of α -glucose, Cellulose is Polymer of β -glucose.
- ◆ Starch is a mixture of two Components,

i.e. amylose and amylopectin, whereas, amylose is a linear polymer, amylopectin has branched chain structure.

◆ Amylose gives a blue colour with iodine solution due to the formation of an inclusion complex.

◆ Sucrose is non-reducing disaccharide.

In lactose, glucose unit is in the reducing form.

◆ Proteins are the condensation polymers of α -amino acids.

◆ $-\text{CO}-\text{NH}-$ is called the peptide bond.

◆ At isoelectric point, the amino acids primarily exist as the neutral dipolar or zwitterion and hence have the minimum solubility.

◆ In amino acids, $-\text{COO}^-$ group acts as the base while $-\text{NH}_3^+$ acts as the acid.

- ◆ During denaturation, the primary structure of proteins remains intact while secondary and tertiary structures are destroyed.
- ◆ The pH of the gastric juice (containing strong HCl) is 2 which causes denaturation of proteins in the stomach.
- ◆ Haemoglobin is a globular protein and the red colour of haemoglobin is due to the iron-protoporphyrin complex called the heme.
- ◆ The bicarbonate / carbonic acid system, i.e. $\text{HCO}_3^- / \text{H}_2\text{CO}_3$ acts as the buffer and maintains the pH of blood between 7.36-7.42.

GOLDEN KEY POINTS

- ◆ Plastics have high molecular weight ranging from 2000 (nylon) to 2,50,000 (PVC)
- ◆ Thermo plastics are linear polymers (nitrocellulose, polyethylene, perspex)

- ◆ Plasticizers fit between the Polymer chains and thus weaken the attraction between the chains there by increasing the flexibility.
- ◆ Nylon-6 (USA) or Perlon (Germany) is prepared by prolonged heating of Caprolactam at 540K.
- ◆ Saran is a Copolymer of Vinylidene Chloride (85%) and Vinyl Chloride (15%).
- ◆ Dacron is a Copolymer of acrylonitrile (40%) and Vinyl Chloride (60%). It is used in making water softener bags, cloth blankets and dyenets etc.
- ◆ Aspirin is used to prevent heart attacks besides being antipyretic and analgesic agents.
- ◆ Soaps, detergent and phospholipids are called surfactants since they lower the surface tension of water.