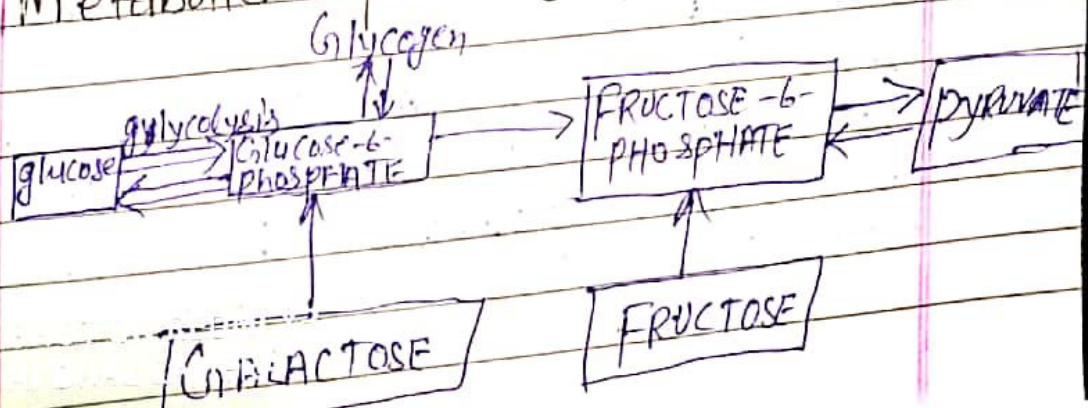


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 Notes for B.Sc part 3rd paper
 VI Unit = 2(3).

Ques (1) Write Notes on Metabolism of Carbohydrate

Carbohydrate Metabolism is the whole of the biochemical processes responsible for the metabolic formation, breakdown, and interconversion of carbohydrates in living organisms. Carbohydrates are central to many essential metabolic pathways. Plants synthesize carbohydrates from carbon dioxide and water through photosynthesis, allowing them to store energy absorbed from sunlight internally.

Metabolic Pathways



Overview of Connections between Metabolic Processes.

Glycolysis —

Glycolysis is the process of breaking down a glucose molecule into two pyruvate molecules, while storing energy released during this process as ATP and NADH. Nearly all organisms that break down glucose utilize glycolysis. Glucose regulation and product use are the primary categories in which these pathways differ between organisms.

Gluconeogenesis —

Gluconeogenesis is the reverse process of glycolysis. It involves the conversion of non-carbohydrate molecules that are converted in this pathway include pyruvate, lactate, glycerol, alanine, and glutamine. This process occurs when there are lowered amounts of glucose. The liver is the primary location of gluconeogenesis, but some also occur in the kidney.

Glycogenolysis —

Glycogenolysis refers to the breakdown of glycogen. In the liver, muscles, and the kidney, this process occurs to provide glucose when necessary. A single glucose molecule is cleaved from a branch of glycogen, and is transformed into glucose-1-phosphate during this process. This molecule can then be converted to glucose-6-phosphate during this process.

Glycogenesis —

Glycogenesis refers to the process of synthesizing glycogen. In humans, excess glucose is converted to glycogen via this process. Glycogen is a highly branched structure consisting of glucose in the form of glucose-6-phosphate, linked together. ~~The~~

pentose phosphate pathway —

The pentose phosphate pathway is an alternative method of oxidizing glucose. It occurs in the

liver, adipose tissue, adrenal cortex, testis, milk glands, phagocyte cells, and red blood cells. It produces products that are used in other cell processes, while reducing NADP to NADPH.

Fructose Metabolism —

Fructose must undergo certain extra steps in order to enter the glycolysis pathway. Enzymes located in certain tissues can add a phosphorylation phosphate group to fructose. This phosphorylation creates fructose-6-phosphate an intermediate in the glycolysis pathway that can be broken down directly in these tissues.

Galactose Metabolism —

Lactose, or milk sugar, consists of one molecule of glucose and one molecule of galactose. After separation from glucose, galactose travels to the liver for conversion to glucose.

Energy production —

Many steps of carbohydrate metabolism allow the cells to access energy and store it more transiently in ATP.