

Course Title: Biochemistry I
Summer Semester
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Max Marks: 30

Note: There are FIVE questions, each carry 6 mark with grand total of 30 marks
ATTEMPT all questions
Avoid copy paste material, as it may deduct your marks

Q1: Write down the points of cell theory.

Ans: cell theory is the historic scientific theory, now universally accepted, that living organisms are made up of cells, that they are the basic structural/organizational unit of all organisms, and that all cells come from pre-existing cells. Cells are the basic unit of structure in all organisms and also the basic unit of reproduction.

The three tenets to the cell theory are as described below:

1. All living organisms are composed of one or more cells.
2. The cell is the basic unit of structure and organization in organisms.
3. Cells arise from pre-existing cells.

Q2: Classify monosaccharides on the basis of number of C-atom along with example.

Ans: Monosaccharides can be classified by the number x of carbon atoms they contain: triose (3), tetrose (4), pentose (5), hexose (6), heptose (7), and so on. Glucose, used as an energy source and for the synthesis of starch, glycogen and cellulose, is a hexose. The number of carbon atoms in monosaccharides varies from three to eight, but the most common number is five (e.g., pentoses, $C_5H_{10}O_5$) or six (e.g., hexoses, $C_6H_{12}O_6$). Monosaccharides do not yield smaller molecular weight sugars on hydrolysis.

Q3: Briefly discuss the function of Macromolecules found in Cell Membrane.

Ans: The main biological functions of lipids include energy storage, as structural components of cell membranes, and as important signaling molecules. Cell contain near about 70% of water. Lipids in membrane Eukaryotic cells are compartmentalized into membrane-bound organelles which carry out different biological functions.

Q4: Discuss amino acids on the basis of requirement in protein synthesis.

Ans: Amino nitrogen accounts for approximately 16% of the weight of proteins. Amino acids are required for the synthesis of body protein and other important nitrogen-containing compounds, such as creatine, peptide hormones, and some neurotransmitters. ... These are commonly called the essential amino acids.

Q5: Explain Digestion and Absorption of Carbohydrate.

Ans: Digestion of carbohydrates is performed by several enzymes. Starch and glycogen are broken down into glucose by amylase and maltase. Sucrose (table sugar) and lactose (milk sugar) are broken down by sucrase and lactase, respectively.

The goal of carbohydrate digestion is to break down all disaccharides and complex carbohydrates into monosaccharides for absorption, although not all are completely absorbed in the small intestine (e.g., fiber). Digestion begins in the mouth with salivary amylase released during the process of chewing.