FLASH CARDS

CLASS : Class 11th **SUBJECT : Zoology**

CHAPTER: Biomolecules

Terminology	Description
Biomolecules	Chemical compounds present in living organisms (organic & inorganic).
Biomicromolecules	Small molecules (<1000 Da) like amino acids, sugars, nucleotides.
Biomacromolecules	Large molecules (>1000 Da) like proteins, nucleic acids, and polysaccharides.
Primary Metabolites	Essential biomolecules found in all cells (e.g., amino acids).
Secondary Metabolites	Non-essential compounds (e.g., alkaloids, pigments).
Molecular Weight	Mass of molecule measured in Daltons (Da).
Amino Acid	Basic unit of proteins containing amino ($-NH_2$) and carboxyl (-COOH) groups.
Zwitterion	Dipolar form of amino acid at physiological pH.
Peptide Bond	Bond formed between two amino acids (-CO–NH).
Essential Amino Acids	Cannot be synthesized by body; must be obtained from diet.
Non-Essential Amino Acids	Synthesized within the body.
Acidic Amino Acids	Contain extra carboxyl group.
Basic Amino Acids	Contain extra amino group.
Protein	A polymer of amino acids linked by peptide bonds.
Significance of Proteins	Structural, enzymatic, hormonal, transport, and defense functions.
Primary Structure	Sequence of amino acids.
Secondary Structure	α-helix and β-pleated sheet.
Tertiary Structure	3D folding due to R-group interactions.
Quaternary Structure	Association of multiple polypeptide chains.
Denaturation	Loss of protein structure due to heat/pH change.

Lipids	Water-insoluble biomolecules made of fatty acids and glycerol.
Fatty Acid	Long hydrocarbon chain with carboxyl group.
Saturated Fatty Acids	No double bonds; solid at room temperature.
Unsaturated Fatty Acids	One or more double bonds; liquid at room temperature.
Triglyceride	Glycerol + three fatty acids.
Phospholipid	A major component of the cell membrane.
Cholesterol	Steroid lipid stabilizing membranes.
Carbohydrates	Sugars and their polymers.
Monosaccharides	Simple sugars (e.g., glucose).
Disaccharides	Two monosaccharides (e.g., sucrose).
Polysaccharides	Long chains of monosaccharides.
Starch	Plant storage polysaccharide.
Glycogen	Animal storage polysaccharide.
Cellulose	Structural polysaccharide in plants.
Nucleotide	Nitrogen base + pentose sugar + phosphate group.
Nitrogen Bases	Purines (A, G) and Pyrimidines (C, T, U).
Nucleic Acids	DNA and RNA; genetic material of cell.
Phosphodiester Bond	Bond linking nucleotides.
DNA	Double-stranded genetic material.
RNA	Single-stranded molecule involved in protein synthesis.
Enzymes	Biological catalysts; mostly proteins.
Active Site	Region where substrate binds.
Enzyme-Substrate Complex	Temporary intermediate formed during reaction.
Specificity	Enzymes are substrate-specific.
Temperature	Activity increases to optimum, then decreases.

pH	Each enzyme has an optimum pH.
Substrate Concentration	Increases rate until Vmax reached.
Enzyme Concentration	Directly proportional to reaction rate.
Activation Energy	Minimum energy required to start reaction.
Lowering Activation Energy	Main function of enzyme.
Transition State	High-energy unstable intermediate state.
Product Formation	Substrate converted to product and released.
Oxidoreductases	Catalyze oxidation-reduction reactions.
Transferases	Transfer functional groups.
Hydrolases	Catalyze hydrolysis reactions.
Lyases	Break bonds without ATP.
Isomerases	Rearrange molecular structure.
Ligases	Join two molecules using ATP.
Cofactor	Non-protein part required for enzyme activity.
Coenzyme	Organic cofactor (e.g., NAD^+).
Prosthetic Group	Tightly bound cofactor.
Apoenzyme	Protein part of enzyme.
Holoenzyme	Apoenzyme + cofactor.
Vmax	Maximum reaction velocity.
Km	Substrate concentration at half Vmax.
Competitive Inhibitor	Competes with substrate for active site.
Effect of Competitive Inhibition	Increases Km; Vmax unchanged.



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