

# Govt. College, Ropar

## Department of ZOOLOGY

Class B.Sc.3rdSem.

(Session 2021-22)

### Biochemistry AND Animal Physiology

Week	Lesson scheduled
1 <sup>st</sup>	➤ Biochemistry: its scope and importance, chemical bonds and energy, Biomolecules: configuration and conformation, Properties of water as biological solvent, Introduction to metabolism..
2 <sup>nd</sup>	➤ Carbohydrates: Structure and Biological importance- Monosaccharides, Disaccharides, Polysaccharides; Derivatives of Monosaccharides; Carbohydrate metabolism: Glycolysis, Citric acid cycle, Pentose phosphate pathway, Gluconeogenesis, Glycogenesis, Glycogenolysis.
3 <sup>rd</sup>	➤ Proteins: Amino acids- Structure, Classification, General and Electrochemical properties of $\alpha$ -amino acids; Physiological importance of essential and non-essential amino acids
4 <sup>th</sup>	➤ Peptide Bond stabilizing protein structure; Levels of protein organization; Protein metabolism: Transamination, Deamination, Urea cycle, Fate of C-skeleton of Glucogenic and Ketogenic amino acids
5 <sup>th</sup>	➤ Lipids: Structure and Significance: Physiologically important saturated and unsaturated fatty acids, Triacylglycerols, Phospholipids, Sphingolipid, Glycolipids, Steroids.
6 <sup>th</sup>	➤ Steroids, Eicosanoids and terpenoids. Lipid metabolism: $\beta$ -oxidation of fatty acids - Palmitic acid, Linoleic acid; Fatty acid biosynthesis, Formation of lipid bi-layer
7 <sup>th</sup>	➤ Nucleic Acids: Structure of Purines, Pyrimidines, Nucleosides and Nucleotides; Nucleic Acid Metabolism: Catabolism of Adenosine, Guanosine, cytosine and thymine.
8 <sup>th</sup>	➤ Enzymes : Nomenclature and classification; Cofactors; Specificity of enzyme action; Isozymes; Mechanism of enzyme action.
9 <sup>th</sup>	➤ Enzyme kinetics; Derivation of Michaelis-Menton equation, Lineweaver-Burk plot; Factors affecting rate of enzymecatalyzed reactions; Enzyme inhibition
10 <sup>th</sup>	➤ <b>MST</b>

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11 <sup>th</sup>	<ul style="list-style-type: none"> <li>➤ Digestion: Physiology of digestion in the alimentary canal; Absorption of carbohydrates, proteins, lipids</li> <li>➤ Excretion: Structure of nephron, Mechanism of Urine formation, Counter-current Mechanism, Osmoregulation</li> </ul>
12 <sup>th</sup>	<ul style="list-style-type: none"> <li>➤ Respiration: Pulmonary ventilation, Respiratory volumes and capacities, Transport of Oxygen and carbon dioxide in blood, Oxygen dissociation curve of haemoglobin, Bohr effect, chloride shift, Haldane effect and control of breathing.</li> </ul>
13 <sup>th</sup>	<ul style="list-style-type: none"> <li>➤ Cardiovascular system: Composition of blood, molecular structure and function of haemoglobin, blood clotting, blood groups including Rh-factor. haemostasis and haemopoiesis. Origin and conduction of the cardiac impulse, Cardiac cycle, electrocardiogram</li> </ul>
14 <sup>th</sup>	<ul style="list-style-type: none"> <li>➤ Structure and physiology of endocrine glands- thyroid; Parathyroid, adrenal, hypothalamus, pituitary, pancreas and gonads.</li> </ul>
15 <sup>th</sup>	<ul style="list-style-type: none"> <li>➤ Muscle: Ultra-structure of skeletal muscle, Molecular and chemical basis of muscle contraction.</li> </ul>



**Surinder Singh**

**Dept of Zoology**



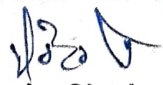
**Principal**

**Govt. College**

**Ropar**

**Govt. College, Ropar**  
**Department of Zoology**  
 Class B.Sc. 4<sup>th</sup> Sem. (Session 2020-21)  
**PAPER : BIOCHEMISTRY AND ANIMAL PHYSIOLOGY**

Week	Lesson scheduled
1 <sup>st</sup>	Biochemistry and its scope; Carbohydrates, Proteins and Lipids. Carbohydrate Metabolism : The Embden Meyerhof, Parnas Pathway (Glycolysis),
2 <sup>nd</sup>	tricarboxylic acid cycle, the hexose monophosphate shunt, glycogenesis and glycogenolysis Nucleic Acids : their classification and functions.
3 <sup>rd</sup>	Enzymes : Nature, their classification and coenzymes.
4 <sup>th</sup>	Lipid Metabolism : $\beta$ -oxidation of fatty acids, fate of glycerol and gluconeogenesis, interaction of carbohydrates and lipids, lipogenesis in tissues, ketosis.
5 <sup>th</sup>	.Protein Metabolism : Metabolism of amino acids (Oxidative deamination, transamination and decarboxylation) hydrolysis of protein and ornithine cycle.
6 <sup>th</sup>	Digestion : Digestion of dietary constituents, regulation of digestive processes and absorption, types of nutrition, feeding mechanism, extra and intra cellular digestion, enzymatic digestion and symbiotic digestion.
7 <sup>th</sup>	Blood : Composition and functions of blood and lymph, molecular structure and function of haemoglobin, blood clotting, blood groups including Rh-factor, haemostasis and haemopoiesis.
8 <sup>th</sup>	Heart : Origin and regulation of heart beat, cardiac cycle, electrocardiogram, cardiac output, blood flow and its regulation, blood pressure and micro-circulation.
9 <sup>th</sup>	● MST
10 <sup>th</sup>	● MST
11 <sup>th</sup>	Respiration : Transport of O <sub>2</sub> and CO <sub>2</sub> , Oxygen dissociation curve of haemoglobin, Bohr effect, chloride shift, Haldane effect and control of breathing.
12 <sup>th</sup>	Excretion : Urine formation and osmoregulation.
13 <sup>th</sup>	Muscles : Ultrastructure, chemical and physiological basis of skeletal muscle contraction.
14 <sup>th</sup>	Neural Integration : Structure of Neuron, resting membrane potential, origin and propagation of impulse along the axon, synapse and myoneural junction.
15 <sup>th</sup>	Endocrine : Structure and physiology of thyroid; Parathyroid, adrenal, hypothalamus, pituitary, pancreas and gonads.

  
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