

**RAYALASEEMA UNIVERSITY**  
**ZOOLOGY SYLLABUS FOR IV SEMESTER - 2022-23**  
**PAPER - IV: ANIMAL PHYSIOLOGY, CELLULAR METABOLISM AND EMBRYOLOGY**

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**HOURS: 60 (5X12)**

**Max. Marks:100**

**UNIT I Animal Physiology - I**

- 1.1 Process of digestion and assimilation
- 1.2 Respiration - Pulmonary ventilation, transport of oxygen and CO<sub>2</sub>
- 1.3 Circulation - Structure and functioning of heart, Cardiac cycle
- 1.4 Excretion - Structure and functions of kidney urine formation, counter current Mechanism

**UNIT II Animal Physiology - II**

- 2.1 Nerve impulse transmission - Resting membrane potential, origin and propagation of action Potentials along myelinated and non-myelinated nerve fibers
- 2.2 Muscle contraction- Ultra structure of muscle, molecular and chemical basis of muscle contraction
- 2.3 Endocrine glands - Structure, functions of hormones of pituitary and pancreas

**UNIT III Cellular Metabolism - I (Biomolecules)**

- 3.1 Carbohydrates - Classification of carbohydrates. Structure of glucose
- 3.2 Proteins - Classification of proteins. General properties of amino acids
- 3.3 Lipids - Classification of lipids

**UNIT IV Cellular Metabolism - II**

- 4.1 Carbohydrate Metabolism - Glycolysis, Krebs cycle, Glycogen metabolism, Gluconeogenesis
- 4.2 Lipid Metabolism -  $\beta$ -oxidation of palmitic acid
- 4.3 Protein metabolism-Transamination, Deamination and Urea Cycle

**Unit - V Embryology**

- 5.1 Gametogenesis
- 5.2 Fertilization
- 5.3 Types of eggs
- 5.4 Types of cleavages

**PRACTICAL SYLLABUS**

**Periods: 24**

**Max. Marks: 50**

**I. ANIMAL PHYSIOLOGY**

1. Qualitative tests for identification of carbohydrates, proteins and fats
2. Study of activity of salivary amylase under optimum conditions
3. T.S. of duodenum, liver, lung, kidney, spinal cord, bone and cartilage

**II. CELLULAR METABOLISM**

1. Estimation of total proteins in given solutions by Lowry's method.
2. Estimation of total carbohydrate by Anthrone method.
3. Qualitative tests for identification of ammonia, urea and uric acid
4. Protocol for Isolation of DNA in animal cells

**III. EMBRYOLOGY**

1. Study of T.S. of testis, ovary of a mammal
2. Study of different stages of cleavages (2, 4, 8 cell stages)