



ST. ALOYSIUS COLLEGE(AUTONOMOUS), JABALPUR

Reaccredited 'A++' Grade by NAAC(CGPA:3.58/4.00)

College with Potential for Excellence by UGC

DST-FIST Supported & STAR College Scheme by DBT

SUBJECT: Zoology

Theory Syllabus

Part A – Introduction			
PROGRAMME: UG Diploma	Class: B.Sc.	2 Year/ IV Semester	Session – 2026-27
Subject – Zoology			
1	Course Code		
2	Course Title	Animal Physiology and Biochemistry	
3	Course Type	Core Course – II (C-5)	
4	Pre – requisite (if any)	Student should have studied Zoology B.Sc. First Year.	
5	Course Learning Outcomes (CLO)	Upon completion of this course, student will be able to:- 1 Understand Importance of biochemistry in Bhartiya Gyan Parampara 2 Know the contributions of Bhartiya scientists in animal Physiology and Biochemistry. 3 Understand functions of biomolecules & their role in metabolism by studying biochemistry. 4 Understand the physiological process of animal and relationship of organ systems like Digestive, Respiratory, Renal, Muscular and Nervous Systems. 5 Examine internal harmony of different body systems by learning inherent disorders and deficiencies which is needed to maintain good Health. 6 Job prospect: (i) As a lab technician in pharmaceuticals pathology lab. (ii) Analytical skills in clinical biochemistry labs. As a scientist and other research and Development related post in food/nutrition and Pharma industries.	
6	Credit Value	04	
7	Total Marks	Max. Marks: 30+70	Min. Passing Marks: 35

5.8.2026

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Ruma

Soni Yadav



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Part B- Content of the Course

Total No. of Lectures- Tutorials- Practical (in hour per week): 3 hour per week L-T-P

Unit	Topics	No. of Lectures
I	Ancient Background of Biochemistry — 1.1 Definition, Importance of Biochemistry in Bhartiya Gyan Parampara. 1.2 Contribution of Indian Scientist in Biochemistry: G.N. Ramachandran and Dr. B.C. Guha 1.3 Panchabhuta and Biomolecules: Biochemical properties of five elements. 2. Biomolecules — 2.1 Micro and Macro molecules. 2.2 pH and Buffers System. 3 Enzymes — 3.1 Definition, Nomenclature and Classification of Enzymes. 3.2 Mechanism of Enzyme action. 3.3 Factors affecting Enzyme activity. 3.4 Co-Enzymes. 4. Vitamins — 4.1 Types, Sources and Biological importance. 4.2 Deficiencies and Disorders. Suggested Activity: 1) Short projects on Ayurvedic formulations. 2) Survey on Vitamin Deficiency in Local Population. Keywords: Biochemistry, Rasayana, Panchabhuta, Biomolecules, Enzymes, Co-Enzymes, Vitamins.	11
II	Carbohydrates and their Metabolism 1.1 Structure, Classification and <i>Biological</i> significance of Carbohydrates. 1.2. Metabolism of Carbohydrates: • Gluconeogenesis • Glycogenesis • Glycogenolysis • Glycolysis • Citric Acid Cycle • Electron Transport Chain 2. Proteins and their Metabolism 2.1 Structure, Classification and Biological significance of Proteins. 2.2 Deamination, Decarboxylation and Transamination of amino acids 2.3 Ornithine cycle.	10

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	3.Lipids and their Metabolism — 3.1 Structure, Classification and Biological significance of Lipids 3.2 Beta oxidation of Fatty acids, Suggested Activity: 1) Create 3D models of glucose and ATP using locally available materials. 2) Collect data on local dietary protein sources. 3) Small survey on prevalence of lifestyle disorder's (Obesity, Diabetics etc.) Keywords: Metabolism, Glycolysis, Glycogenesis, Citric Acid Cycle, Electron Transport Chain, Proteins, Lipids, Fatty Acids, Ornithine Cycle	
III	Bhartiya Gyan Parampara 1.1 Tridosha — data, Pitta and Kapha. 1.2 Contribution of Bhartiya Scientist • Rishi Charak, Autar Singh Paintal • Nitya Anand 2. Physiology of Digestion 2.1 Buccal, Gastric, Intestinal Digestion, Absorption, Assimilation. 2.2 Hormonal control of secretion of enzymes in Gastrointestinal tract. 2.3 Diseases associated with digestive system- Irritable Bowel Syndrome, Inflammatory Bowel Diseases, Peptic Ulcers and Gritstones. 2.4 Thermoregulation. Suggested Activities: 1) Prepare Model of digestive system and its function. 2) Prepare Chart of Process of Thermoregulation in various animals. Keywords: Stomach, Intestine, Liver, Peptic Ulcers, Thermoregulation.	11
IV	1. Physiology of Respiration 1.1 Mechanism of respiration, Pulmonary ventilation 1.2 Respiratory volumes and capacities 1.3 Transport of oxygen and carbon dioxide in blood and role of Respiratory pigments, 1.4 Diseases associated with respiration — Asthma, Cystic fibrosis, Pneumonia, Tuberculosis 2. Physiology of Nerve impulse conduction 2.1 Structure and types of neurons 2.2 Conduction of nerve impulse 2.3 Diseases associated with nerve impulse - Epilepsy Alzheimer's disease, Parkinson's disease	14

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	3. Physiology of Muscle contraction 3.1 Structure and Types of muscles. 3.2 Sliding filament theory of muscle contraction mechanism and energetic. 3.3 Diseases associated with Muscles - Muscle cramps, Muscular dystrophies, Myasthenia gravis. Suggested Activities: 1) Prepare chart and model of Respiratory system, different type of muscles and neurons. 2) Gathering information about respiratory, muscular and nervous disorders in your local community. Keyword- Respiratory pigments, Neurons, Muscles, Asthma, Alzheimer's disease, Parkinson's disease, Myasthenia gravis.	
V	1. Physiology of Excretion 1.1 Nitrogenous waste - Ammonotelism, Ureotelism, Uricotelism. 1.2 Mechanism of urine formation. 1.3 Diseases associated with Kidney - Chronic Kidney, Kidney Stones, Polycystic Kidney Disease. 1.4 Osmoregulation. 2. Physiology of Reproduction 2.1 Reproductive Physiology. 2.2 Sex hormones. 2.3 Diseases associated with Reproduction — Infertility. Erectile dysfunction, Polycystic Ovary Syndrome Ovarian cysts. Suggested Activities: 1) Prepare Chart and Model of excretory system reproduction system of male and female. 2) Classify the animal on the basis of Nitrogenous waste. Keywords: Excretion, Nitrogenous waste. Osmoregulation, Reproduction, Sex hormones, Polycystic Kidney Disease, Infertility, Ovarian cysts	10

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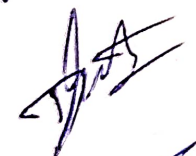
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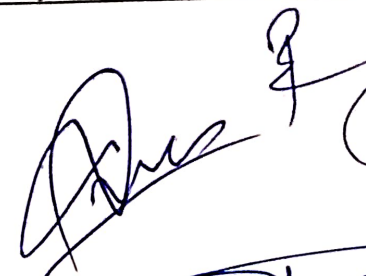
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Part D-Assessment and Evaluation		
Suggested Continuous Evaluation Methods: Maximum Marks: 100 Continuous Comprehensive Evaluation (CCE: 30 Marks University Exam (UE) 70 marks		
Internal Assessment: Continuous Comprehensive Evaluation (CCE)	Class Test Assignment/Presentation	30
External Assessment: University Exam Section Time: 03 Hours	Section (A): Very Short Questions Section (B): Short Questions Section (C): Long Questions	70


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SUBJECT: Zoology

Practical syllabus

Scheme B-1 (For course of science Practical Discipline having Major Practicum Component)

Part A – Introduction

PROGRAMME: UG
Diploma

Class: B.Sc.

2 Year/ IV Semester

Session – 2026-27

Subject – Zoology

1 Course Code

Core Course H – (C-5)

2 Course Title

Practical Animal Physiology and Biochemistry

3 Course Type

Core Course H – (C-5)

4 Pre – requisite (if any)

Student should have studied Zoology in B.Sc. First Year

5 Course Learning Outcomes (CLO)

Upon completion of the course students will be able to:

1. Perform basic biochemical tests for biomolecules
2. Prepare and demonstrate buffer systems.
3. Study enzyme activity under different conditions
4. Relate biochemical principles with nutrition and health.

Perform various blood related experiment

6 Credit Value

02

7 Total Marks

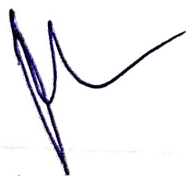
Max. Marks: 30+70

Min. Passing Mark

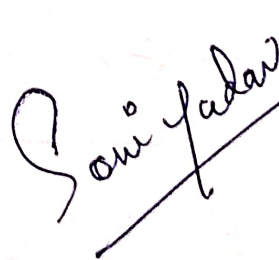


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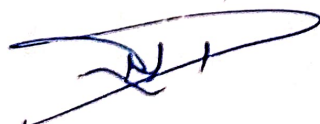


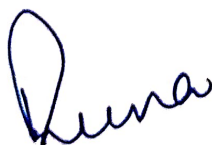


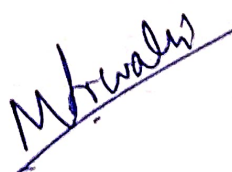














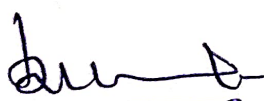
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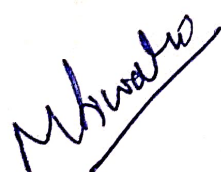
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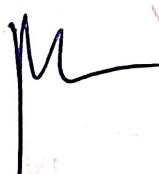
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Part B- Content of the Course		
Total No. of Practicals (2 hours/Week) Total No. of Practicals = 60 hours		
S. No.	"Topics"	No. of Lectures
1	Introduction to Biochemical Laboratory: Safety measures, handling of instruments (pH meter, centrifuge, spectrophotometer).	5
2	Preparation of Buffers: Acetate and phosphate buffers	5
3	Qualitative tests for Carbohydrates, Protein and Lipid:	8
4	Estimation of reducing sugars (Glucose) using Benedict's method.	5
5	Demonstration of Enzyme activity: Effect of temperature and pH on amylase activity.	6
6	Detection of Vitamin C from lemon juice or local fruits (Titration method),	5
7	Qualitative tests for nitrogenous waste- Ammonia, Urea and Uric acid.	8
8	To determine blood group of given sample.	5
9	Total count of RBC's and WBC's in human blood.	8
10	Preparation of Haematin crystals from human blood.	5
Keywords:- pH meter, Centrifuge, Buffers, Enzymes, Spectrophotometry, Titration, Blood and Haematin.		


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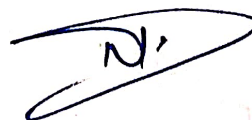














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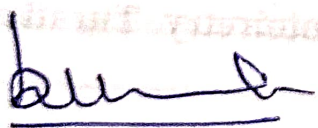
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Part D-Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Internal Assessment	Marks	External Assessment	Marks
Class Interaction /Quiz	30	Viva Voice on Practical	70
Attendance		Practical Record File	
Assignments (Charts/ Model Seminar / Rural Service/ Technology Disseminating/ Report of Excursion/ Lab Visits/ Survey / Industrial visit)		Table work / Experiment	
Total Marks: 100			



5.8.2026



