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B.Sc I-Zoology

The examination shall comprise three theory papers carrying 50 marks and a practical test, candidates must obtain minimum pass marks in theory and practical separately.

Paper I	Animal diversity I	50 marks
Paper II	Cell Biology	50 marks
Paper III	Evolution and behavior	50 marks
Practical		50 marks
	Total	200 marks

Paper I
Animal Diversity

Unit I

1. principals of classification – salient features and classification up to orders in no chordates. Structural organist ion in different classes no chordates.

2. Protozoa – Type study of locomotion. Osmoregulasioon nutrition and reproduction in Protozoa (Paramecium, Euglena).

3. Porifera and coelenterate - Type study (sycon, obelie) corals and coral reefs, polymorphism in hydrozoa.

Unit II

4. Platy helminthes and nemathelminthes – Type study (Fascicle, Tania, Wuchereria), reproduction and parasites adaptation.
5. Annelid – Coolum and excretory system, type study (Nereid, Hirudinaria)

Unit III

6. Mollusk – Type study (Pile, union)

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Unit IV

7. Arthropod – type study (palimony), Crustacean larval forms, vision in Arthropods, and Social life in insects (Honeybee).
8. Eachimodirmata – Starfish (External features)

Paper II
Cell biology

Unit I

1. Diversity of cell size and shape.
2. Cell theory
3. Structures of prokaryotic and eukaryotic cells.

Unit II

4. Microscopic techniques for study of cells (Compound, Phase Contrast Microscope).
5. Cellular energy transaction – role of mitochondria and chloroplasts.
6. Membrane transport of small molecules and the ionic basis of membrane excitability

UNIT.III

7. Vesicular traffic in the secretary and endocentric path ways
8. cell singling
9.cytoskeleton

Unit.IV

10.Cell division cycle
11.Biology of cancer
12.Mendel's lows of Heredity

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Paper.III

Evolution and Behavior

Unit.I

1.concept of evolution
2.origin of life on earth

Unit II

3. Variation, mutation, recombination, policy, isolation, natural selection, evolution in action.
4. Concept of species and speciation.
5. Mimicry

Unit III

6. Macro and microevolution, evolution of man.
7. Genetics of behavior, natural selection and behavior.

Unit IV

8. Hormones, drugs and behavior.
9. Reproductive behavior patterns.
10. Human ethnology.

B.Sc. II – Zoology

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The examination shall comprise three theory papers carrying 50 marks and a practical test, candidates must obtain minimum pass marks in theory and practical separately.

Paper I	Animal diversity –II	50 marks
Paper II	Physiology	50 marks
Paper III	Vertebrate Endocrinology and reproductive biology	50 marks
Practical		50 marks
	Total	200 marks

Paper I
Animal Diversity –II

Unit I

1. Origin and general characters of chordates.
2. Protectorates - classification unto orders, interrelationships, structural organization of hemichordates, post embryonic development of Branchiostoma.

Unit II

3. Agnatha - classification upto orders.
4. Fishes - classification up to orders, parental care, respiratory organs, migration.

Unit III

5. Amphibians – Origin and evolution of land vertebrates, classification up to orders, parental care.
6. Reptiles – classification up to orders, extinct reptiles, poisonous snakes of India.

Unit IV

7. Birds – Migration of Birds, origin of Birds.
8. Mammals – Origin, classification and general characters.

Paper II

Physiology

Unit I

1. Aim and scope of physiology – Cell physiology, mammalian physiology, comparative and applied physiology.
2. Chemical foundations of physiology – Solutions, osmotic pressure diffusion, pK and pH, buffers.
3. Bimolecular – Carbohydrates, amino acids, peptides, lipids, proteins, nucleic acid and nucleotides

Unit II

4. Blood groups, blood coagulation, structure and function of hemoglobin.
5. Heart – Structure, conduction, and regulation of heart beat, cardiac cynic and ECG.
6. Peripheral circulation – Blood pressure, capillary pressure, regulation.

Unit III

7. Respiration – Mechanism and control of breathing.
8. Digestion and absorption of dietary components.
9. Nutritional requirements and disorders

Unit IV

10. Structure and function of kidney – Physiology of urine formation.
11. Physiology of Skeletal and smooth muscle function.
12. Physiology of neuronal function.

Paper III
Vertebrate endocrinology and reproductive Biology

Unit I

1. Integrative Physiology – Basic concepts of neural and endocrine regulation of Physiological processes.
2. Endocrine glands and hormones – classification of hormones, brief account of structural features, histology of endocrine glands, hormonal effects.

Unit II

3. Biosynthesis and secretion of adrenal, ovarian, testicular and thyroidal hormones, factors influencing secretion.
4. Hormones and human health – Production of hormones as pharmaceuticals.

Unit III

5. Reproductive strategies in vertebrates.
6. Reproductive cycles in vertebrates.
7. Hormonal regulation of gamesomeness in males and females.

Unit IV

8. Fertilization in vivo and in vitro. Post fertilization events till blast cyst formation. Embrystransfer technology.
9. Accessory sex organs and their dependence as steroid hormones Sex determination and sex differentiation.
10. Endocrine disorders – Brief description.

B.Sc. III – Zoology

The examination shall comprise three theory papers carrying 50 marks and a practical test; candidates must obtain minimum pass marks in theory and practical separately.

Paper I	Biochemistry and Molecular Biology	50 marks
Paper II	Genetics and Immunology	50 marks
Paper III	Environmental Biology And Toxicology	50 marks
Paper IV	Developmental Biology And Applied Zoology	50 marks

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Practical 100 marks

Total 300 marks

Paper I

Biochemistry and Molecular Biology

Biochemistry

Unit I

1. Amino acids and peptides – properties and structure
2. Carbohydrates and lipids – classification, structure and clinical significance.

Unit II

3. Vitamins – Discovery, structure and functions.
4. Proteins – classification, structure and properties.
5. Nucleic acid and nucleotides – Structural properties and functions.

Unit III

6. Nature of enzymes – classification, purification and kinetic assays, enzymes and their uses, factors for enzymes activity.

Molecular I biology

7. DNA replications – General principal, enzymes and inhibitors.
8. DNA repair

Unit IV

9. Transcription
10. Protein biosynthesis
11. Co and post – translation modifications, inhibitors.

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Paper II
Genetics and Immunology

Unit I

1. Madelia inheritance patterns and laws of heredity
2. Co – and incomplete dominance
3. Linkage and linkage maps

Unit II

4. Varieties of gene expression – multiple alleles, lethal genes, apheliotropic genes, gene interactions, epitasis.
5. Sex chromosome system and sex-linkage.
6. Non-chromosomal heritance (episodes, mitochondria and chloroplasts)

Unit III

7. Mutations and chromosomal alterations
8. Human genetics – chromosomal and single gene disorders, Genetic counseling.
9. Immunity – Innate and adaptive, cell, tissues and molecules of immune system.

Unit IV

10. Antigen and antibodies – Structures, type, interactions in vivo and in vitro.
11. Humeral and cell mediated immune response – Basic details.
12. Mechanism of immune response.
13. Genetic control of immune response.

Paper III
Environmental biology and Toxicology

Unit I

1. Concept of ecosystem, introduction to laws of limiting factors.
2. Energy flow in ecosystem – Tropic levels.
3. Food chains.

Unit II

4. Characteristics of populations.
5. Environmental pollution- Air water and Soil Green house effect.
6. Biotic community.

Unit III

7. Conservation and Natural Resources.
8. Introduction to toxicology – Definition of toxicity, classification of toxicants.
9. Environmental toxicology – Food additives, air water and soil pollutants.

Unit IV

10. Toxic agents and mode of action – pesticides, metals., solvents, radiation, carcinogens, poisons.
11. Human toxicology and medical ethics.

Paper IV
Developmental biology and applied zoology

A - Developmental biology

Unit I

1. Genet genesis – Spermatogenesis and cogenesis.
2. Fertilization – Biochemical and post Fertilization events.

3. Parthenogenesis.
4. Type of animal eggs, patterns of cleavage, germ layers.

Unit II

5. Extra embryonic membranes, type of placenta.
6. Organizer – Concept, induction process.
7. Aging – Concepts and models.

B – Applied Zoology
Aquaculture

Unit III

1. World aquaculture – Role importance, status current concepts of cultural fin fishes and shell fishes.
2. Micronutrients.
3. Estuarine and brackish water fishes of India.

Unit IV

4. Fresh water fishes of India, river system, reservoir, ponds, tank fisheries, captive and cultured fisheries, and cold water fisheries.
5. Fishing craft and gear.
6. Field culture – Ponds – running water, recycled water cage culture, pen culture, culture site, its requirement, nursery and grow out pond preparation management, fertilization, stocking, feeding, monitoring and management, poly culture – from construction.

Or

Medical Zoology

Unit III

1. Introduction to phraseology (Pertain to various termininologies used)

2. Brief introduction to pathogenic microbes : Viruses and Bacteria.
(a). Brief account of life history, mode of infection and pathogen city of the following pathogens with reference to man.
(b). Pathogenic protozoan : Endameba, Trypanosome, Leis mania Guardia, Trichomonas, Plasmodium.
Pathogenic helminthes : Faseiolopsis, Schist soma, Echinococous, Ancyclostoma Trichinella Wuchereria.

Unit IV

Arthropods as vectors of human diseases: Malaria (Anopheles Stephens) yellow fever and Dengue, Filariasis, Encephalitis, Encephalitis, Plague and epidemic typhus (Pedicels) control of above mentioned vectors. Histopathological changes in organs in relation to diseases.
Epidemic diseases such as cholera, small pox their occurrence and eradication programmers.
Brief introduction to human defence mechanisms, Antigens and antibodies.
General account of drug therapy and drug resistance.

Biotechnology

Unit III

1. Basic concepts in genetic engineering .
2. Enzymologist of genetic engineering: Restriction enzymes, DNA lipase, Polymerase etc.
3. Cloning vehicles: Plasmids Lambda phage, Chiron phage Shuttle vectors, 2u DAN plasmids, yeast plasmids.

Unit IV

4. Introduction of cloned gene in host cells: Transformation, transduction particle gun electro oration liposome mediated, cultivation etc.
5. Changing genes: Site – directed mutagenesis.
6. Transferring genes into animal acolytes, eggs, embryos, and specific animal tissues.

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