

# ZOOLOGY

## **I. Animal Diversity-Invertebrates:**

- Architectural pattern of an animal, Taxonomy and phylogeny, Major subdivisions of the animal kingdom.
- **Animal-Like Protists:**  
The Protozoa: evolutionary perspective, locomotion and reproduction, Protozoa of veterinary and medical importance.
- **Porifera:**  
Body wall, skeleton and water currents system. Coelenterates: Reproduction plan and alteration of generation (Polymorphism), Coral reefs.
- **Platyhelminthes and Nematodes:**  
Parasitic adaptations and medical importance.
- **Annelids:**  
Metamerism and ecological importance.
- **Molluscs:**  
Modification of foot, Feeding and their role in the shell fishery.
- **Arthropods:**  
Modification in their mouth parts, Role of arthropods as vectors in the transmission in microbial infection. Arthropods and their ecological importance.
- **Echinoderms:**  
Characteristics, Evolutionary perspective, Relationships to other animals; echinoderm characteristics.

## **II. Animal Diversity-Chordata:**

- **Hemichordates and Invertebrate Chordates:**  
Evolutionary Perspective: Phylogenetic Relationships and considerations.
- **Fishes:**  
Structural and functional adaptations of fishes.
- **Amphibians:**  
Movement onto land and early evolution of terrestrial vertebrates.
- **Reptiles:**  
Characteristics of reptiles, adaptations in reptilians.
- **Birds:**  
Migration and navigation, adaptations.
- **Mammals:**  
Structural and functional adaptations of mammals.

### III. Principles of Animal Life:

- **The chemical basis of animal life:**  
Brief introduction to bio-molecules; carbohydrates, lipids, proteins and nucleic acids.
- **Cell:**  
Cell concept and cell theory, Organization of cellular organelle (their structure and functions), Central dogma of cell biology (Transcription and Translation), Meiosis and Mitosis
- **Protozoa:**  
Reproduction pattern in protozoan, Parasitism in protozoan
- **Mesozoa and Parazoa:**
  - a) Porifera: Cells types, body wall and skeleton and water currents system
  - b) Coelenterata: Reproduction plan and alteration of generation (Polymorphism)
- **Tissues Types:**  
Epithelial, connective, muscle and nervous tissues.  
Organs and organ systems.
- **Enzymes:**  
Function and factors affecting their activity, cofactors and coenzymes.
- **Energy Harvesting:**  
Aerobic and anaerobic respiration the major source of ATP.
- **Genetics:**  
Mendel's law of inheritance, Chromosomal basis of inheritance, Multiple alleles, Eukaryotic chromosomes: Mutations and chromosomal aberrations.
- **Ecological Concepts:**  
Interactions, Concepts and components of the ecosystem, Food chain, Food web, Biogeochemical cycles, Forests, Biomes, Wildlife conservation and management, Environmental pollution, Greenhouse effect, Acid-rain, Global warming and climate change.
- **Evolution:**  
Darwinian evolutionary theory based on natural selection and the evidence, Microevolution: Genetic variation and change within species, Macroevolution: Species and speciation (Allopatric, Parapatric and Sympatric speciation)

### IV. Animal Form and Function:

- **Protection, Support and Movement:**  
Integumentary system of invertebrates and vertebrates
- **Animal muscles:**  
The muscular system of invertebrates and vertebrates.
- **Digestion and Nutrition:**  
Feeding mechanism, Digestion, Organization and regional function of the alimentary canal, Regulation of food intake, Nutritional requirements.

- **Internal Fluids and Respiration:**  
Internal fluid environment, Composition of blood, Circulation and respiration mechanisms
- **Homeostasis:**  
Excretion, Vertebrate kidney mechanisms, Temperature regulation
- **Nervous Coordination:**  
Nervous system and Senses: Functional units of the nervous system, Synapses junctions between nerves.
- **Chemical Coordination:**  
Endocrine System; Vertebrate endocrine glands and types of hormones, Mechanism of hormones action,
- **Animal Behaviour:**  
Learning, Habituation, Insight learning, latent learning, classical learning: Control of Behaviour; social behaviour