

### **Section 1: Animal world**

Animal diversity, distribution, systematics and classification of animals, phylogenetic relationships.

### **Section 2: Evolution**

Origin and history of life on earth, theories of evolution, natural selection, adaptation, speciation.

### **Section 3: Genetics**

Basic Principles of inheritance, molecular basis of heredity, sex determination and sex-linked characteristics, cytoplasmic inheritance, linkage, recombination and mapping of genes in eukaryotes, population genetics.

### **Section 4: Biochemistry and Molecular Biology**

Nucleic acids, proteins, lipids and carbohydrates; replication, transcription and translation; regulation of gene expression, organization of genome, Krebs's cycle, glycolysis, enzyme catalysis, hormones and their actions, vitamins.

### **Section 5: Cell Biology**

Structure of cell, cellular organelles and their structure and function, cell cycle, cell division, chromosomes and chromatin structure.

### **Section 6: Gene expression in Eukaryotes**

Eukaryotic gene organization and expression (Basic principles of signal transduction).

### **Section 7: Animal Anatomy and Physiology**

Comparative physiology, the respiratory system, circulatory system, digestive system, the nervous system, the excretory system, the endocrine system, the reproductive system, the skeletal system, osmoregulation.

### **Section 8: Parasitology and Immunology**

Nature of parasite, host-parasite relation, protozoan and helminthic parasites, the immune response, cellular and humoral immune response, evolution of the immune system.

### **Section 9: Development Biology**

Embryonic development, cellular differentiation, organogenesis, metamorphosis, genetic basis of development, stem cells.

### **Section 10: Ecology**

The ecosystem, habitats, the food chain, population dynamics, species diversity, zoogeography, biogeochemical cycles, conservation biology.

## **Section 11: Animal Behaviour**

Types of behaviours, courtship, mating and territoriality, instinct, learning and memory, social behaviour across the animal taxa, communication, pheromones, evolution of animal behaviour.