



GATE Syllabus

Part II – LIFE SCIENCE (XL)
Section–XL-T Zoology



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SECTION – XL-T: ZOOLOGY

Course Syllabus

Unit 1: Animal World

- Animal diversity
- Distribution
- systematics and classification of animals
- phylogenetic relationships

Unit 2: Evolution

- Origin and history of life on earth
- Theories of evolution
- Natural selection
- Adaptation
- Speciation

Unit 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

Unit 4: Biochemistry and Molecular Biology

- Nucleic acids, proteins, lipids and carbohydrates
- Replication, transcription and translation
- Regulation of gene expression, organization of genome, Kreb's cycle, glycolysis, enzyme catalysis, hormones and their actions, vitamins

Unit 5: Cell Biology

- Structure of cell
- Cellular organelles and their structure and function

- Cell cycle
- Cell division
- Chromosomes and chromatin structure

Unit 6: Gene Expression in Eukaryotes

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

Unit 7: Animal Anatomy and Physiology

- Comparative physiology
- Respiratory system
- Circulatory system
- Digestive system
- Nervous system
- Excretory system
- Endocrine system
- Reproductive system
- Skeletal system
- Osmoregulation

Unit 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

Unit 9: Development Biology

- Embryonic development
- Cellular differentiation
- Organogenesis
- Metamorphosis
- Genetic basis of development
- Stem cells

Unit 10: Ecology

- The ecosystem
- Habitats
- Food chain
- Population dynamics
- Species diversity
- Zoogeography
- Biogeochemical cycles
- Conservation biology

Unit 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 behavior