ZOOLOGY

I. Animal Diversity-Invertebrates

- Architectural pattern of an animal, Taxonomy and phylogeny, Major subdivisions of 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 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
- Mesozoza and Parazoa: Porifera: Cells types, body wall and skeleton and water currents system, 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.

- Mendel's law of inheritance, Chromosomal basis of inheritance, Multiple alleles, Eukaryotic chromosomes: Mutations and chromosomal aberrations.
- Ecological Concepts: Interactions, Concepts and components of ecosystem, Food chain, Food web, Biogeochemical cycles, Forests, Biomes, Wildlife conservation and management, Environmental pollution, Green house 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 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 nervous system, Synapses junctions between nerves.
- Chemical Coordination: Endocrine System; Vertebrate endocrine glands and types of hormones, Mechanism of hormones action,
- Animal Behavior: Learning, Habituation, Insight learning, latent learning, classical learning: Control of Behavior; social behavior

SUGGESTED READINGS

S.No.	Title	Author
1.	Integrated Principles of Zoology.	Hickman, Jr. C.P., Keen, S. L, Larson, and Eisenhour, D.J.
2.	Zoology	Miller, S. A. and Harley, J. B.
3.	Biology	Campbell, N.A.
4.	Evolution. 2nd Edition	Douglas Futuyma
5.	Animal behavior:- An Evolutionary Approach, (9^{th} Edition)	John Alcock