Creative Learning System
FOUNDATION FOR BRIGHT FUTURE

UPSC CIVIL SERVICES EXAMINATION

Official Optional Subject Syllabus

Zoology

Zoology demands a strong understanding of animal life, physiology, genetics, evolutionary biology, and ecology, blending classical taxonomy with modern biological principles.

Paper I

Non-chordata and Chordata

- **Non-chordata:** Classification and relationship of various phyla up to subclasses: Acoelomate and Pseudocoelomate, Coelomata, General features and life history of Paramecium, Monocystis, Plasmodium and Leishmania.
- **Chordata:** Classification and relationship of various phyla up to subclasses, General features and life history of Herdmania, Branchiostoma. Origin of Tetrapods. Comparative anatomy of vertebrates.

Ecology, Ethology and Economic Zoology

- **Ecology:** Biosphere: concept of biosphere; biomes, Biogeochemical cycles, Human induced changes in atmosphere including green house effect, ecological succession, biomes and ecotones, community ecology.
- **Ethology:** Concepts of Ethology; Habituation, learning, instinct, imprinting, conditioning, Social behavior in insects and primates.
- **Economic Zoology:** Apiculture, sericulture, lac culture, carp culture, pearl culture, prawn culture, vermiculture. Major infectious and communicable diseases (malaria, filaria, tuberculosis, cholera and AIDS).

Biostatistics and Instrumentation

- **Biostatistics:** Designing of experiments; null hypothesis; correlation, regression, distribution and measure of central tendency, chi square, student-test, F-test (one-way & two-way F-test).

- **Instrumentation:** Spectrophotometer, phase contrast and fluorescence microscopy, radioactive tracer, ultra centrifuge, Gel electrophoresis, PCR, ELISA, FISH and chromosome painting.

Paper II

Cell Biology and Genetics

- **Cell Biology:** Structure and function of cell and its organelles (nucleus, plasma membrane, mitochondria, Golgi bodies, endoplasmic reticulum, ribosomes and lysosomes), Cell division (mitosis and meiosis), Chromosome structure.
- **Genetics:** Mendel's laws of inheritance, recombination, linkage, multiple alleles, genetics of blood groups, sex determination, sex linked inheritance, mutation. Watson-Crick model of DNA.

Evolution and Systematics

- **Evolution:** Theories of origin of life; Historical development of evolutionary concepts; Synthetic theory of evolution; Hardy-Weinberg law; Polymorphism; Isolation; Speciation.
- **Systematics:** Concept of species and sub-species, Principles of taxonomy, Zoological nomenclature, Methods used in taxonomy.

Biochemistry, Physiology and Developmental Biology

- **Biochemistry:** Structure and role of carbohydrates, fats, fatty acids, cholesterol, proteins and amino-acids, nucleic acids. Bioenergetics. Enzymes.
- **Physiology:** Composition of blood, blood groups, coagulation of blood; Oxygen and carbon dioxide transport; Nerve impulse transmission; Muscle contraction; Digestion and absorption. Excretion.
- **Developmental Biology:** Gametogenesis; fertilization; Types of eggs and cleavage; Gastrulation; Placenta in mammals; Metamorphosis in insects and amphibians.