# University of Mysore

## Syllabus for Entrance Examination for P.G. Admission in Zoology

I. Animal classification and Nomenclature. Biodiversity and its importance. General characters and classification (upto classes) with examples of the phyla Protozoa, Porifera, Cnidria, Platyhelminthes, Aschelminthes and Annelida. Transmission cycles and pathogenicity of *Plasmodium vivax, Taenia solium, Ascaris, Ancyclostoma*, and *Wucheraria*. Parasitic adaptations.

II. Salient features and classification (upto classes) of Arthropoda, Mollusca, Echinodermata and Chordata. Systematic position of *Onychophora*. Social organization in Termites, beneficial and harmful insects. Regenerative ability in invertebrates. Affinities of Hemichordata, *Ascidia, Amphioxus* and *Cyclostomata*.

III. General characters of Pisces, Amphibia, Reptilia. Differences between chondrichthyes and osteichthyes. Scales in fishes. Classification of Pisces, Amphibia and Reptilia upto orders. Arcades and fossae. Poisonous and non-poisonous snakes in India with keys. Snake venom.

IV. General characters of Aves and Mammalia. Classification of Aves upto sub-classes. Flight adaptation and migration in birds. Distribution of prototheria and metatheria. Dentition in mammals. Structure of tooth and dental formulae of horse, cow, elephant, cat, dog, rabbit, monkey and man. Evolutionary account of aortic arches. Evolution of kidneys in vertebrates.

V. Definition, classification and biological importance of carbohydrates. Classification of amino acids. Structure and biological importance of proteins. Classification and biological importance of lipids. Structure of DNA and RNA. Watson and Crick model of DNA. Classification, properties and biological importance of enzymes.

VI. Water, glucose and salt balance. Osmoregulation in shark, fresh water teleosts and terrestrial mammals. Thermo regulation in ectotherms, endotherms and heterotherms. Aestivation and hibernation. External and internal respiration. Respiratory pigments. Glycolysis, Kreb's cycle and oxidative phosphorylation. Functions and regulations of Mammalian heart. Blood clotting. Nitrogen excretion, physiology of urine formation. Principal types of muscles and its contraction. Sliding filament theory. Ultra structure of multipolar neuron. Synaptic transmission of nerve impulse.

VII. Ultra structure of an animal cell. Plasma membrane- ultra structure- fluid mosaic model. Endoplasmic reticulum- ultra structure and functions. Mitochondria and ribosome. Nucleus and chromosomes. Cell division-mitosis and meiosis. Types of cancer-carcinogenic agents and cancer therapy. Immunology – natural and artificial immunity, structure of immunoglobulin and types. Gene concept- jumping genes and split genes. Genetic code, transcription and translation in prokaryotes.

VIII. Gametogenesis- Spermatogenesis and oogenesis. Significance of fertilization. Parthenogenesis and its significance. Types of cleavage. Development of frog, chick and man. Placenta. Hormones of pituitary, thyroid, adrenals and pancreas. Hormonal control of reproduction. Family planning.

IX. Nature and Nurture. Norm of reaction and genetic homeostasis. Penetrance and expressivity. Mono and dihybrid crosses. Interaction of genes. Linkage and crossing over. Sex linked inheritance and sex determination. Types of mutations and disorders due to mutant genes. Mutagens and CLB technique. Eugenics, euthenics and eufenics. Concept of organic evolution. Hardy-Weinberg Law of Genetic equilibrium and factors influencing the allelic frequency. Types of speciation. Aquatic, arboreal and desert adaptations. Coloration and mimicry.

X. Scope of ecology. Ecological factors. Biogeochemical cycles and food chain. Population and community ecology. Concept, types and structure of ecosystem. Causes and consequences of air, water and noise pollutions. Zoogeographical realms. Wild life conservation. Culture of animals of economic importance- earth worm, honey bee, pearl, poultry, diary and silk worm. Standard deviation, standard error and chi-square test. Tissue culture, transgenic plant and animal systems. Innate and leaned behaviour in animals. Circadian and circannual rhythms.