

Zoology

**POST GRADUATE DEGREE
STANDARD**

UNIT I

Non-Chordata:

General Organization - classification with diagnostic features upto class level. Shelled Protozoans, Economic Importance, Fossil Protozoans and their importance, Neuromotor system in ciliates.

UNIT II

Origin of Metazoa - Theories and Evolution, Economic importance of Portiera, Polymorphism in Hydrogen, Coral reefs - structure - Formation and theories, Origin and evolution of Coelenterates.

UNIT III

Origin - Types of coelom in Bilateria Effects of parasitism on the parasites and Hosts in Helminthes, Coelom in Annelida, Metamorphosis in Annelida, Modes of Life in polychaetes.

UNIT IV

Larval forms and parasitism in Crustacea - Neuro secretion and pheromones in insects.

UNIT V

Adaptive radiation in Gastropods, Oyster culture and pearl formation, Larval forms of Echinodermata and their Significance.

UNIT VI

Retrospective Metamorphosis, Neoteny and affinities of Ascidian.

UNIT VII

Migration in Fishes, Accessory Respiration in Fishes, Structure, Affinities, and distribution of Dipnoi, Origin and Evolution of Amphibia.

UNIT VIII

Conquest of Land - Adaptations to live onland - Temporal Vacuities in Reptilia.

UNIT IX

Adaptive radiation in Birds - Migration in Birds

UNIT X

Study of wild life Mammals in India and Conservation measures.

PAPER - II

UNIT I

Cell, and Molecular Biology:

DNA Structure and function, Replication - Genetic code, RNA and protein synthesis.

UNIT II

Bio Physics Microscopy:

- Principles of Electron Microscope, Polarising, Fluorescent, Interference Microscope. Photo - Electric

Calorimetry, Freeze drying - freezing, Microtome and Cryostat X-ray - Diffraction, - Ultra - Violet and infrared, Spectroscopy and Autoradiography.

UNIT III

Genetics:

- Gene concept, one Gene - one polypeptide - concept, Enzyme regulation - Operon concept - GAL and LAC - Operon System. Population Genetics - Hardy - Weinberg Law - Genetic Equilibrium. Radiation Genetics - mechanisms of Chromosomal breakage - Mutagens and Mutagenesis - Carcinogens and carcinogenesis - Human Genetics. Karyotype - Variation in Karyotypes with special reference to syndromes. Genetic Engineering - Present Status.

UNIT IV

Bio-Statics:

- Collection of data. Primary and secondary - compiling and sampling methods - frequency distribution, frequency tables - diagrammatic representation - variables - measures of central tendency, mean, median and mode, measures of dispersion. Standard deviation Standard error - Correlation regression, regression analysis - students "t" test and chi-square test.

UNIT V

Bio-Chemistry:

- Structure of carbohydrates, amino acids, proteins, lipids - Glycolysis and Krebs's cycle - oxidation, reduction - oxidative phosphorylation energy conservation and release - cyclic AMP-ATP - saturated and unsaturated fatty acids - cholesterol - enzymes, mechanism of enzyme action, immunoglobulins and immunity - vitamins and coenzymes - Hormones, their classification, biosynthesis and functions.

UNIT VI

Physiology:

- With reference to mammals digestion, role of salivary gland liver, pancreas and intestinal glands in digestion, nutrition, balanced diet in man-assimilation, intermediary metabolism - composition of blood - coagulation - Transport of oxygen, carbon dioxide, blood pigments - mechanism of respiration - muscles, mechanism of muscle contraction, temperature regulation, acid, base balance and homeostasis - Nerve impulse conduction, neurotransmitters - receptors, photo, thermo and chemoreception - nephron and urine formation - endocrine glands, ovary and pituitary organs and their inter relationship, physiology of reproduction in humans Normal control of development in man and insect pheromones - Bioluminescence, biological rhythms.

UNIT VII

Immuno-Biology:

- Immune responses - Primary, Secondary and Theories. Immunity types - Innate, Active and Passive - Cell mediated and Humoral immunity, Types of Antigens and immunoglobulins - Cellular Immunity, T & B CELLS - elisa & RIA Techniques - AIDS. Developmental Biology:- Fertilization: Significance, polyspermy Gynogenesis, Androgenesis, Parthenogenesis, Polarity Symmetry, Radiant, Embryonic fields, Differentiation - Nuclear and Chemical factors, Inductors and organisers, Genes and organisers Regeneration - Polarity and Gradient in Regeneration.

UNIT VIII

Resource Ecology and Management, Renewable and Non-Renewable natural resources. Energy resources - conventional and non-conventional. Fresh water marine Estuarine and Mangrove resources. Wild Life, conservation and Management. Air, Water, Soil, Sound pollution. Laws related to Environment - Laws related to Environmental Protection Act. Space Ecology and Radiation Ecology.

UNIT IX

Evolution:

- Bio-chemical Evolution - cultural Evolution. Present Status of Natural Selection. Genetics and Natural Selection, Adaption and Evolution.

UNIT X

Economic Zoology:

- Parasitism and commonsalism - protozoan parasites and diseases - helminth parasites and diseases of man and domestic animals - Beneficial and destructive insects - insect pests and crops and stored products. Control methods. Sericulture, apiculture, poultry, pisciculture and induced breeding, Shell fisheries - Aqua culture practices in Tamil Nadu and their impact on the environment and on agriculture.