Zoology (Subject Code -214)

PAPER – I

Non Chordata and chordata. Ecology, Ethology, Bio-statistics and Economic zoology.

Section – A : Non chordata and chordata

1. A general survey, classification and relationship of the various Phyla.
2. Protozoa : Study of the structure, bionomica and life history paramecium, monocystis, malarial parasite, trypanosoma and Leishmania.Locomotion, nutrition and reproduction in protozoa.
3. Porifera : Canal system, Skeleton and reproduction.
4. Coelenterata : Structure and life history of Obelia and Aurelia. Polymorphism in Hydrozoa, coral formation, metagenesis, Phylogenetic relationship of cnidaria and acnidaria.
5. Helminthes : Structures and life history of Planaria, Fasciola, Taenia and Ascaris. Parastic adaptation, Helminthes in relation to man.
6. Annelida : Nerieis, earthworm and leech; coelom and metamerism, modes of life in polychaetes.
7. Arthropoda : Palaemon, Scorpion, cockroach, larval forms and parasitism in Crustacea, mouth parts, vision and respiration in arthropods, social life and metamorphosis in insects. Importance of Peripatus.
8. Mollusca : Unio Pila, oyster, culture and pearl formation, cephalopods.
9. Echinodermata – General organization, larval forms and affinities of Echinodermata.
10. General organization and characters, outline classification and inter-relationship of protochordeta, Pisces, Amphibia, Reptilia, Aves and Mammalia.
11. Neotony and retrogressive metamorphosis
12. A general study of comparative account of the various systems of vertebrates.
13. Locomotion, migration and respiration in fishes, structure and affinities of Dipnoi.
14. Origin of Amphibia, distribution, anatomical peculiarities and affinities of Urodela and Apoda.
15. Origin of Reptiles, Adaptive radiation in reptiles, fossil reptiles, poisonous and non poisonous snakes of India, poison apparatus of snake.
16. Origin of birds, flightless birds, aerial adoptation and migration of birds.

Section – B : Ecology, Ethc.ogy, Biostatics and Economic Zoology.

Ecology :

1. Environment : Abiotic factors and their role, Biotic Factors inter and inter – specific relations.
2. Animal : Organisation at population and community levels, ecological successions.
3. Ecosystem : Concept, components, fundamentals operation, energy flow, biogeo-chemical cycles, food and trophic levels.
4. Adaptation in fresh water, marine and terrestrial habitats.
5. Pollution in air, water and lan.
6. Wild life in India and its conseration.

Ethology

7. General survey of various types of animal behaviour
8. Role of harnones and phermones in behaviour
9. Choronobiology, Biological clock, seasonal rhythms, tidal rhythms.
10. Neuro-endocrine control of behaviour.
11. Methods of studying animals behaviour.

Bio Statistics

12. Methods of sampling, frequency distribution and measures of central tendency, standard deviation, standard error and standard deviance, correlation and regression and Chi-square and t-test.

Economic Zoology

13. Parasitism, commensalisms & host parasite relationship
14. Parasitic protozoan's helminthes and insects of man and domestic animals.
15. Insect pests of crops and stores products.
16. Beneficial insects.
17. Pisciculture and induced breeding.

PAPER – II

Cell biology, Genetics, Evolution and Systematics, Biochemistry Physiology and Embryology.

Section 'A' : Cell Biology, Genetics, Evolution and systematics.

1. Cell Biology – Structure and function of Cell and Cytoplasmic constituents, structure of nucleus, plasma membrane, mitochondria, golgibodies, endo-plasmic reticulum and ribosomes, cell division, mitotic spindle and chromosome movements and meiosis.Gene structure and Function ; Watson-Crick model of DNA, Replication of DNA Genetic code, protein synthesis cell differentiation sex chromosomes and sex determination.
2. Genetics:Mendelian laws of inheritance, re-combination, linkage and linkage maps, multiple, alleles; mutation (natural and induced), mutation (and evolution, Meiosis, chromosome number and form, structural rearrangements; polyploidy, cytoplasmic, inheritance, regulation of gene expression in prokaryotes and eukaryotes, biochemical genetic, elements of human genetics; normal and abnormal karyotypes, genes and diseases, Eugenics.
3. Evolution and systematics – Origin of life history of evolution through Lamarck and his works. Darwin and his works sources and nature of organic variation, Natural selection, Hardy-Weinberg law, cryptic and warning, colouration mimicry, Isolation mechanism, and their role. Fauna, concept of species and sub species, principles of classification, zoological nomenclature and international code. Fossils, outline of geological eras phylogeny of horse, elephant, camel, origin and evolution of man, principles and theories of continental distribution of animals, zoogeographical realms of the world.

Section 'B' : Biochemistry, Physiology and Embryology

1. Biochemistry : Structure of carbohydrates, lipids, animoacids, proteins and nucleic acids, glycolysis and krebs cycle, oxidation and reduction, oxidative phosphorylation, energy conservation and release, ATP, Cyclic ABP, saturated and unsaturated fatty acids, cholesterol, steroid hormones Types of enzymes, Mechanism of enzyme action immunoglobulins and immunity, Vitamins and co-enzymes; Hormones, their classification, biosynthesis and functions.
2. Physiology with special reference to animals, composition of blood, blood groups in man, coagulation, oxygen and carbondioxide transport haemoglobin, breathing and its regulation nephron and urine formation, acid base balance and homeostasis,

temperature regulation in man, mechanism of conduction along the axon and across synapse, neurotransmitters, vision, hearing and other receptors; types of muscles, ultrastructure and mechanism of contraction of skeletal muscle role of salivary glands, liver, pancreas and intestinal glands in digestion, absorption of digested food, nutrition and balanced diet of man, Mechanism of action of steroid and peptide hormones, role of hypothalamus, pituitary, thyroid, parathyroid, pancreas, adrenal, testis, ovary and pineal organs and their inter-relationships, physiology of reproduction in humans, hormonal control of development in man and insects, pheromones in insects and mammals.

Embryology : Gametogenesis, fertilization, types of eggs, cleavage, development upto gastrulation in branchiostoma, frog and chick, Fate maps of frog and chick; Metamorphosis in frog. Formation and fate of extra embryonic membrane in chick, Formation of anmion, allantois and types of placenta in mammals, function of placenta in mammals, function or placenta in mammals. Organisers, Regeneration, genetic, control of development, Organesis of central nervous system, sense organs heart and kidney of vertebrate embryos Ageing and its implication in relation to man.