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Zoology

Non-chordates

Priniciples of Animal Taxonomy- International Code of Zoological nomenclature. Classification of Non-chordate Phyla, Locomotory Organs, Locomotion , Reproduction and Nutrition in protozoa, Human Parasites in Protozoa. Canal System in Sponges. Parasitic adaptation in Helminthes. Respiratory Organs, Pigments and mechnism of respiration in invertebrates. Excretory organs and inechanism of excretion in invertebrates. Origin and evolution of nervous system invertebrates phyla. General organization of Rotifers. Polymorphism in coelentrata. Larval forms of free living invertebrates and their evolutionary significances. Larval forms of parasites.

Chordates

Origin of Chordates. Nutrition- Digestion and absorption of Carbohydrats, protein and lipids, regulation of secretion of digestive fluids, Musscles construction and action.Respiration - Pigments: mechanism and regulation of breathing. O_2 and CO_2 transport. Ganetogenesis. Spermatogenesis, Oogenesis, fertilization, Biochemistry of fertilization .Types of eggs and cleavage in chordates. Foetal membrane with special reference to chick. Placenta in mammals. Excretion- Nitrogenous wastes- role of nephron in urine formation . Circulation -blood groups, cogulation, structure and function of blood cells .

Animal ecology, taxonomy and evolution :

Principles and concepts pertaining to energy and energy flow in ecological system. Population, its organization, structure growth, dencity and control. Community and its organization. Predation, Mutualization and commensalisms. Terrestrial, Marine and Fresh water ecology. Taxonomy, its history and functions, species concepts. Genes in population, Hardy Weiberg Law, Natural selection, Micro and Macro evolution.

Entomology

Mouth parts, Photoreception, Bioluminescence and Larval forms of insects economic importance(Apiculture, Lac culture, sericulture) of insects, methods of application of insecticides and fumigants and type of appliances used for insects control , insects paste and their control, control of parasites and predators, insects hormones.

Fisheries

Origin and evolution of fishes(elasmobranches and bony-fishes), Electric light and sound producings organ, Lateral line system, Webrionn ossicless. Induced breeding. Fish disease and their control, fish preservation and processing, cause of spoilage methods of preservation.

Animal development and morphogenesis

Gaemetes and fertilization, nature of eggs and their cleavage, organogeresis of vertebrates, evolution of viviparity in mammals, Cellular and biochemical events in metamorphosis of insects and amphibians, cell differentiation, Regeneration and axial gradient.

Cell physiology and Biochemistry

Prokaryotic and eukaryotic cells, their organization, structure, prosperties and transport mechanisms; cell cycle. pH and buffers. Structure, properties and classification of carbohydrates, lipids, amino acids, proteins and nucleic acids. Enzymes, their mechanism of action and classification. Vitamins. Metabolic pathways of carbohydrates, lipids and amino acids. Replication, transcription and translation.

Mammalian physiology

Nervous system- generation and transmission of nerve impulse, nurotransmitters, structure of muscle mechanism and regulation of muscle action, Digestion of carbohydrates, lipids and proteins and their absorption, structure of heart, constitution of blood, its clotting, role of hemoglobin, Respiration- mechanism of CO_2 & O_2, transport, Bohr's effect, Urine formation, urea synthesis, acid-base balance, nitrogen exeretion, Temperature regulation mechanism

Cytogenetics and Biostatistics

Chromosome structure and their behaviour in cell division, Concept of genoms, DNA finger printing, Gene cloning, gene library, Sex determination, Mutation, Cytoplasmic inheritance.

Biostatisties- Collection and classification of biological data, concepts of probability, Standard deviation, Standard error, Student's t test and Chi-square test.

Endocrinology and Animal behaviour

Endocrine glands in vertebrates and invertebrates, Types of hormones, Hormonal action mechanism. Physiological basis of behaviour, lateney, warm up, summation & fatigue, Stereotyped and acquired behaviour, migratory behaviour of birds & fishes, reproductive behaviour, Pheromones, biological clock, social organization of primates.

Toxicology

Basic concepts of toxicology, acute, short-term & chronic toxicology, mutagenicity, carcinogenicity. Effects of pesticides on physiological system, Mode of action of organochlorine, Organo phosphorus, carbamates, pyrethroid pesticides. Integrated pest management.