Diversity Of Living World

What is life?; Nature, Scope & meaning of zoology; Branches of Zoology; Need for classification- Zoos as tools for study of taxonomy; Basic principles of Classification: Biological system of classification- (Phylogenetic classification only); Levels or Hierarchy of classification; Nomenclature - Bi & Trinominal; Species concept; Kingdom Animalia; Biodiversity - Meaning and distribution, Genetic diversity, Species diversity, Ecosystem diversity(alpha,beta and gama), other attributes of biodiversity, role of biodiversity, threats to biodiversity, methods of conservation, IUCN Red data books, Conservation of wildlife in India -Legislation, Preservation, Organisations, Threatened species.

Structural Organization In Animals

Levels of organization, Multicellularity: Diploblastic & Triploblastic conditions; Asymmetry,Symmetry: Radial symmetry, and Bilateral symmetry (Brief account giving one example for each type from the representative phyla); Acoelomates, Pseudocoelomates and Eucoelomates: Schizo & Entero coelomates (Brief account of formation of coelom); Tissues: Epithelial, Connective, Muscular and Nervous tissues.

Animal Diversity-I: Invertebrate Phyla

General Characters -Classification up to Classes with two or three examples - (Brief account only). Porifera; Cnidaria; Ctenophora; Platyhelminthes; Nematoda; Annelida (Include Earthworm as a type study adhering to NCERT textbook); Arthropoda; Mollusca; Echinodermata; Hemichordata.

Animal Diversity-Ii: Phylum: Chordata

General Characters - Classification up to Classes - (Brief account only with two or three examples). Phylum : Chordata; Subphylum: Urochordata; Subphylum: Cephalochordata; Subphylum : Vertebrata; Superclass: Agnatha, Class Cyclostomata; Superclass: Gnathostomata, Superclass pieces, Class: Chondrichthyes, Class: Osteichthyes; Tetrapoda, Class: Amphibia (Include Frog as a type study adhering to NCERT textbook), Class: Reptilia, Class: Aves, Class: Mammalia.

Locomotion & Reproduction In Protozoa

Locomotion: Definition, types of locomotor structures pseudopodia (basic idea of pseudopodia without going into

different types), flagella & cilia (Brief account giving two examples each); Flagellar & Ciliary movement - Effective & Recovery strokes in Euglena, Synchronal & Metachronal movements in Paramecium; Reproduction: Definition, types. Asexual Reproduction: Transverse binary fission in Paramecium & Longitudinal binary fission in Euglena. Multiple fission, Sexual Reproduction.

Biology & Human Welfare

Parasitism and parasitic adaptation; Health and disease: introduction; Life cycle, Pathogenecity, Treatment & Prevention (Brief account only) 1. Entamoeba histolytica 2. Plasmodium vivax 3. Ascaris lumbricoides 4. Wuchereria bancrofti; Brief account of pathogenecity, treatment & prevention of Typhoid, Pneumonia, Common cold, & Ring worm; Drugs and Alcohol absuse.

Type Study Of Periplaneta Americana

Habitat and habits; External features; Locomotion; Digestive system; Respiratory system; Circulatory system; Excretory system; Nervous system - sense organs, structure of ommatidium; Reproductive system.

Ecology & Environment

Organisms and Environment: Ecology, population, communities, habitat, niche, biome and ecosphere (definitions only); Ecosystem: Elementary aspects only, Abiotic factors- Light, Temperature & Water (Biological effects only), Ecological adaptations; Population interactions; Ecosystems: Types, Components, Lake ecosystem; Food chains, Food web, Productivity and Energy flow in Ecosystem, Ecological pyramids - Pyramids of numbers, biomass and energy; Nutritient cycling - Carbon, Nitrogen & Phosphorous cycles (Brief account); Population attributes: Growth, Natality and Mortality, Age distribution, Population regulation; Environmental issues.

Human Anatomy And Physiology-I

Digestion and absorption: Alimentary canal and digestive glands; Role of digestive enzymes and gastrointestinal hormones; Peristalsis, digestion, absorption and assimilation of proteins, carbohydrates and fats, egestion, Calorific value of proteins, carbohydrates and fats ; Nutritional disorders: Protein Energy Malnutrion (PEM), Disorders of digestive system- indigestion, constipation, vomiting, jaundice, diarrhea, kwashiorkor.

Breathing and Respiration: Respiratory organs in animals; Respiratory system in humans; Mechanism of breathing and its regulation in humans - Exchange of gases, transport of gases and regulation of respiration, Respiratory volumes; Respiratory disorders: Asthma, Emphysema, Occupational respiratory disorders - Asbestosis, Silicosis, Siderosis, Black Lung Disease in coal miners.

Human Anatomy And Physiology-II

Body Fluids and Circulation: Clotting of blood; Human circulatory system - structure of human heart and blood vessels; Cardiac cycle, cardiac output, double circulation, regulation of cardiac activity; Disorders of circulatory system: Hypertension, coronary artery disease, angina pectoris, heart failure.

Excretory products and their elimination: Modes of excretion - Ammonotelism, Ureotelism, Uricotelism, Human excretory system - structure of kidney and nephron; Urine formation, osmoregulation; Regulation of kidney function -Renin-Angiotensin

- Aldosterone system, Atrial Natriuretic Factor, ADH and diabetes insipidus; Role of other organs in excretion; Disorders: Uraemia, renal failure, renal calculi, nephritis, dialysis using artificial kidney.

Human Anatomy And Physiology -III

Muscular and Skeletal system: Skeletal muscle - ultra structure; Contractile proteins & muscle contraction, Skeletal system and its functions; Joints. Disorders of the muscular and skeletal system: Myasthenia gravis, tetany, muscular dystrophy, arthritis, osteoporosis, gout, regormortis.

Neural control and coordination: Nervous system in human beings - Central nervous system, Peripheral nervous system, and Visceral nervous system, Generation and conduction of nerve impulse; Reflex action; Sensory perception; Sense organs; Brief description of other receptors; Elementary structure and functioning of eye and ear.

Human Anatomy And Physiology-IV

Endocrine system and chemical co-ordination Endocrine glands and hormones; Human endocrine system - Hypothalamus, Pituitary, Pineal, Thyroid, Parathyroid, Adrenal, Pancreas, Gonads; Mechanism of hormone action, Role of hormones as messengers and regulators; Hypo and Hyperactivity and related disorders: Common disorders - Dwarfism, acromegaly, cretinism, goiter, exophthalmic goiter, diabetes, Addison's disease, Cushing's syndrome.

Immune system: Basic concepts of Immunology - Types of Immunity - Innate Immunity, Acquired Immunity, Active and Passive Immunity, Cell-mediated Immunity and Humoral Immunity, Interferon, HIV, and AIDS.

Human Reproduction

Human Reproductive System: Male and female reproductive systems; Microscopic anatomy of testis & ovary; Gametogenesis, Spermatogenesis & Oogenesis; Menstrual cycle; Fertilization, Embryo development up to blastocyst formation, Implantation; Pregnancy, placenta formation, Parturition, Lactation.

Reproductive Health: Need for reproductive health and prevention of sexually transmitted diseases (STD); Birth control - Need and methods, contraception and medical termination of pregnancy (MTP); Amniocentesis; infertility and assisted reproductive technologies - IVF-ET, ZIFT, GIFT.

Genetics

Heredity and variations. Mendel's laws of inheritance with reference to Drosophila (Drosophila melanogaster- Grey, Black body colour; Long, Vestigial wings), Pleiotropy, Multiple alleles and inheritance blood groups, Rh-factor, Codominance (Blood groups as example), elementary idea of polygenic inheritance, skin colour in

humans, sex- determination- in humans, birds, Fumea, genic balance theory of sex determination, Haplodiploidy in honey bees;

Sex-linked inheritance- Haemophilia and colorblindness, Mendelian disorders in humans-Thalassemia, Haemophilia, Sickle cell anemia, cystic fibrosis, Phenylketonuria, Alkaptonuria; Chromosomal disorders- Down syndrome, Turner's syndrome, Klinefelter syndrome; Genome, Human genome project, and DNA fingerprinting.

Organic Evolution

Origin of Life, Biological evolution and Evidence for biological evolution (palaeontological, comparative anatomical, embryological and molecular evidence);

Theories of evolution: Lamarckism, Darwin's theory of Evolution-Natural Selection with example (Kettlewell's experiments on Biston betularia), Mutation Theory of Hugo De Vries; Modern synthetic theory of Evolution - Hardy Weinberg law, Evolutionary forces, Types of Natural Selection; Gene flow and genetic drift; Variations (mutations and genetic recombination);

Adaptive radiation-viz., Darwin's finches and adaptive radiation in marsupials Human evolution; Speciation - Allopatric, sympatric; Reproductive isolation.

Applied Biology

Apiculture, Animal Husbandry, Pisciculture, Poultry management, Dairy management, Animal breeding, Bio-medical Technology, Diagnostic Imaging (X-ray, CT scan, MRI), ECG, EEG, Application of Biotechnology in health, Human insulin and vaccine production; Gene Therapy; Transgenic animals; ELISA; Vaccines, MABs, Cancer biology, stem cells.