BIOLOGY

Diversity In the Living World:

The living world: The Diversity in the living world, Taxonomic categories,

Biological classification: Kingdoms (Monera, Protista, Fungi, Plantae, and Animalia), Viruses, Viroids and Lichens,

Plant kingdom: Algae, Bryophytes, Pteridophytes, Gymnosperms, Angiosperms,

Animal kingdom: Basis of classification of animals and Classification of Animals

Structural Organisation In Plants And Animals:

Morphology of flowering plants: The Root, The Stem, The Leaf, The Inflorescence, The Flower, The Fruit, The Seed, Semi-technical Description of a Typical, Flowering Plant, Description of Some Important Families,

Anatomy of flowering plants: The Tissue System, Anatomy of Dicotyledonous and Monocotyledonous Plants

Structural organisation in animals: Organ and Organ System, Amphibian-Frog

Cell: Structure And Functions:

Cell: the unit of life: A Cell, The Cell Theory, An Overview of Cell, Prokaryotic Cells, Eukaryotic Cells

Biomolecules: Analysis of Chemical Composition of organisms, Primary and Secondary Metabolites, Biomacromolecules, Proteins, Polysaccharides, Nucleic Acids, Structure of Proteins, Enzymes

Cell cycle and cell division: Cell Cycle, Mitosis and Meiosis and its significance

Plant Physiology:

Photosynthesis in higher plants: Photosynthesis, Early Experiments, Location of photosynthesis, Pigments involved in Photosynthesis, Light Reaction, The Electron Transport, Synthesis and utilization of ATP and NADPH, The C4 Pathway, Photorespiration, Factors Affecting Photosynthesis

Respiration in plants: Do Plants Breathe? Glycolysis, Fermentation, Aerobic Respiration, The Respiratory Balance Sheet, Krebs/Citric acid cycle, Respiratory Quotient

Plant growth and development: Growth, Differentiation, Dedifferentiation and Redifferentiation, Development, Plant Growth Regulators

Human Physiology:

Breathing and exchange of gases: Respiratory Organs, Mechanism of Breathing, Exchange of Gases, Transport of Gases, Regulation of Respiration, Disorders of Respiratory System

Body fluids and circulation: Tissue Fluids-Blood, Lymph, Circulatory Pathways, Double Circulation, Regulation of Cardiac Activity, Disorders of Circulatory System

Excretory products and their elimination: Human Excretory System, Urine Formation, Function of the Tubules, Mechanism of Concentration of the Filtrate, Regulation of Kidney Function, Micturition, Role of other Organs in Excretion, Disorders of the Excretory System

Locomotion and movement: Types of Movement, Muscle, Skeletal System, Joints, Disorders of Muscular and Skeletal System

Neural control and coordination: Neural System, Human Neural System, Neuron as Structural and Functional Unit of Neural System, Central Neural System

Chemical coordination and integration: Endocrine Glands and Hormones, Human Endocrine System, Hormones of Heart, Kidney and Gastrointestinal Tract, Mechanism of Hormone Action

Reproduction:

Sexual reproduction in flowering plants: Flower structure, Angiosperms, Pre-fertilisation: Structures and Events, Double Fertilisation, Post-fertilisation: Structures and Events, Apomixis and Polyembryony

Human reproduction: The Male Reproductive System, The Female Reproductive System, Gametogenesis, Menstrual Cycle, Fertilisation and Implantation, Pregnancy and Embryonic Development, Parturition and Lactation

Reproductive health: Reproductive Health – Problems and Strategies, Population Explosion and Birth Control, Medical Termination of Pregnancy, Sexually Transmitted Diseases, Infertility

Genetics And Evolution:

Principles of inheritance and variation: Mendel's Laws of Inheritance, Inheritance of One Gene, Inheritance of Two Genes, Sex Determination, Mutation, Genetic Disorders

Molecular basis of inheritance: The DNA, The Search for Genetic Material, RNA World, Replication, Transcription, Genetic Code, Translation, Regulation of Gene Expression, Human Genome Project, DNA Fingerprinting

Evolution: Origin of Life, Evolution of Life Forms – A Theory, Evidence for Evolution, Adaptive Radiation, Biological Evolution, Mechanism of Evolution, Hardy – Weinberg Principle, Evolution, Origin and Evolution of Man

Biology In Human Welfare:

Human health and disease: Common Diseases in Humans, Immunity, AIDS, Cancer, Drugs and Alcohol Abuse

Microbes in human welfare: Microbes in Household Products, Microbes in Industrial Products, Microbes in Sewage Treatment, Microbes in Production of Biogas, Microbes as Biocontrol Agents, Microbes as Biofertilisers

Biotechnology:

Biotechnology: principles and processes: Principles of Biotechnology, Tools of Recombinant DNA Technology, Processes of Recombinant DNA Technology

Biotechnology and its application: Biotechnological Applications in Agriculture and Medicine, Transgenic Animals, Ethical Issues

Ecology:

Organisms and populations: Populations, Logistic growth, Population interactions
Ecosystem: Ecosystem–Structure and Function, Productivity, Decomposition, Energy Flow, Ecological Pyramids

Biodiversity and conservation: Biodiversity and Biodiversity conservation