

Biology

Unit I Diversity in Living World

- **Biology**- its meaning of relevance to mankind
- **Taxonomy** – Concept of species and taxonomical hierarchy
- **Systematic** – Introduction to plant Systematic, its aims , objectives and importance , classification , brief history , introduction , various systems of classification of living organism [Two kingdom system , five kingdom system] Brief introduction to nomenclature and binomial system of nomenclature
- **Salient features and classification of kingdom Monera** (including Archaeobacteria and cyno bacteria) General structure ,occurrence ,reproduction and economics importance.
- **Kingdom protista**- General structure ,occurrence , reproduction and economic importance
- **Kingdom Fungi**- General structure, occurrence, reproduction and economic importance, diseases of economically important crop plant , rusts , smuts, downy and powdery mildew damping off.
- **Kingdom Plantae**- salient features and classification of plants into major groups.
Algae- General account, structure, life cycle of biological importance of green algae, brown algae and red algae .
Bryophytes- General account , structure, life cycle and economic importance of liverworts and mosses.
- **Pteridophytes**- General account , structure, classification, life cycle and economic importance.
- **Gymnosperms**- General account , structure, classification life cycle and economic importance.
- **Angiosperms**- classification up to class ,General account , structure, life cycle and economic importance.
Viruses- General structure, types and reproduction of viruses
Lichens- General account ,structure and life history.
- **Kingdom Animalia** – salient features (in the reference to habitat , habits morphology and economic importance)and classification of non chordates up to phylum level.
Salient features (in the reference to habitat , habits, morphology and economic importance) classification of chordates up to class level.

Unit II Structural organization in plants

- **Tissue** ,Tissue system in plants
- **Morphology**, function and modification of root , stem and leaf
- **Anatomy** of root , stem and leaf , primary and secondary growth in dicot stem
- **Inflorescence**, Types of Inflorescence, flower (including postion and arrangement of different whorls) placentation , fruit, types of fruit, seed.
- **Diagnostics features**, economic importance and distribution pattern of Angiospermic families
 - A) Family Brassicaceae
 - B) Family Fabaceae
 - C) Family solnaceae
 - D) Family Liliaceae
 - E) Family Poaceae

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Unit III Plant Physiology

Transport in Plants - Movement of water (including diffusion ,osmosis, plasmolysis and water relations of cells) and nutrients, long distant of water – absorption, apoplast , symplast , transpiration pull, root pressure and guttation , transpiration opening and closing of stomata, uptake and translocation of mineral nutrients- Transport of food ,phloem transport , mass flow hypothesis.

Mineral Nutrition – Essential minerals , macro and micro nutrients and their role , deficiency symptoms , Mineral toxicity, Elementary idea of hydroponics as a method to study mineral nutrition.

Nitrogen Metabolism - Biological nitrogen fixation , Nitrogen cycle.

Photosynthesis - Photosynthesis as means of autotrophic nutrition, pigments involved in Photosynthesis , absorption and action spectra , photochemical and biosynthetic phases of Photosynthesis , photophosphorylation : cyclic and non cyclic of photophosphorylation, chemiosmotic hypothesis, photorespiration, factors affecting Photosynthesis.

Respiration- Aerobic respiration : Glycolysis; Kerbs's cycle Electron transport chain and oxidative phosphoryation , Anaerobic respiration , respiratory substance and respiratory quotient

Plant Growth and development – phases of plant growth and plant growth rate , conditions of growth , Differentiation, and dedifferentiation, Redifferentiation Growth regulators – Role of auxins, gibberdlin, cytokinin, ethylene, abscissic acid photoperiodism, role of phytochrome and harmones in photoperiodism, Dormancy, methods of breaking seed dormancy, vernalization.

Plant movements- Tropic movements ,phototropism ,gravitropism and their mechanism, Nastic movements.

Unit IV Strutral organization in Animals

-Tissue in animals

- Morphology, anatomy and function of different systems (digestive, circulatory respiratory nervous and reproductive) of earthworm, frog and an insect (Cockroach)

Unit V Animal Physiology

Human Physiology

Digestion and absorption :- Alimentary canal and digestive glands , role of digestive enzymes and gastrointestinal harmones , digestion, absorption and assimilation of proteins carbohydrates and fats, egestion , nutrition and digestive disorders.

Breathing and respiration – respiratory organs in human beings , Mechanism of Breathing and its regulation in human, Transport of respiratory gases, Respiratory volumes , respiratory disorders .

Circulation

Composition of Blood , Blood groups, coagulation of blood , composition of lymph and its functions , structure of human heart and blood vessels , Cardiac cycle, Cardiac output, ECG , double circulation , Disorders of circulatory systems .

Excretion- Modes of excretion, structure and function of excretory system , Urine formation , osmoregulation, Regulation of kidney function , Renin- angiotensin , role of other organs in excretion , Disorders of excretory system.

▪ **Locomotion and Movement** :- Types of movement , Skeletal muscle – contractile proteins and muscle contraction , skeletal system and its function , joints. Disorders of muscular and skeletal system