

Std. – XI: Biology
(Upgraded syllabus)
Section I - Botany

Unit 1 Diversity in Living World:

Chapter 1- Diversity in organisms

1. Diversity in living organisms-Brief idea.
2. Systematic and binomial system of nomenclature - meaning of the terms taxonomy, systematics, classification and nomenclature, Need of classification. **Three domains of life, Concept of species.** Taxonomic hierarchy with examples. Binomial nomenclature explanation, significance and examples.
3. Classification of living organisms (five Kingdom classification) – Major groups and principles of classification for each Kingdom with examples.
4. Lichens - Meaning, characters, examples and importance.
5. Viruses and viroids - Definitions, characters, types with examples, Economic importance and list of viral diseases.

Chapter 2 - Kingdom Plantae

1. Salient features of major plant groups - Algae, Bryophyta, Pteridophyta, Gymnosperms and Angiosperms (Dicotyledons and Monocotyledons). Three to five salient features and two examples of each category.
2. Botanical gardens and herbaria - Meaning, importance and list of gardens and herbaria in India.

Unit 2 Structure and function of cell

Chapter 3 - Biochemistry of cell:

1. Basic chemical constituents of living bodies.
2. Structure and function of carbohydrates, proteins, lipids and nucleic acids in brief.
3. Enzymes - Definition, **Types**, general properties, **Enzyme action** and factors affecting enzyme activity in brief.

Chapter 4 Cell Division

1. Cell cycle
2. Mitosis
3. Meiosis

Unit 3 Structural organization in plants:

Chapter 5 - Morphology of Plants

1. Morphology, anatomy and functions of different parts - Roots, stem, leaf, inflorescence, flower, fruit and seed. **(To be dealt along with the relevant practicals of the practical syllabus)**
2. Plant tissues.

Unit 4 Plant Physiology:

Chapter 6 - Plant Water Relation and Mineral Nutrition

1. Movement of water, food, nutrients and gases.- Absorption of water and minerals, **Apoplast and Symplast Pathways**. Active and passive absorption in brief.

2. Guttation

Ascent of sap, **root pressure concept** and cohesion - tension theory.

Translocation of sugars **through phloem** brief account.

Transpiration – structure of stomata, mechanism **of opening and closing of stomata, Role of K⁺ ions**

3. Role of water and minerals - macronutrients and micronutrients and their role. **Mineral deficiency symptoms, Mineral toxicity, Elementary idea of Hydroponics, Nitrogen Metabolism (nitrogen cycle, biological nitrogen fixation)**

Chapter 7 - Plant Growth and Development:

Seed dormancy.

Germination - Hypogeal, epigeal and viviparous.

Definition and characteristics of growth.

Phases of growth, **Conditions of growth, Differentiation, de- differentiation, redifferentiation**

Sequence of developmental process in a plant cell

Growth regulators - auxins, gibberellins, cytokinines, ethylene and abscissic acid (role in brief)

Photoperiodism, **Photomorphogenesis including brief account of Phytochromes (Elementary idea)**

Vernalization.

Std. - XI
Section II – Zoology

Unit 1 Diversity in Living World:

Chapter 8 - Kingdom Animalia:

1. Salient features of major phyla under kingdom Animalia. Classification of following phyla with three to five salient features and two examples of each category: Porifera, Coelenterata, Platyhelminthes, Nematelminthes, Annelida, Arthropoda, Mollusca, Echinodermata and Hemichordata.

Classification of phylum chordata upto class level with three to five salient features and two examples of each category: Urochordata, Cephalochordata, Cyclostomata, Chondrichthyes, Osteichthyes, Amphibia, Reptilia, Aves and Mammalia.

2. Zoological parks and Museums - General idea with list.

Unit 2 Structure and function of cell:

Chapter 9 - Organization of Cell:

1. Cell theory - brief account
2. Prokaryotic and eukaryotic cell - structure and examples.
3. Plant cell and animal cell.
4. Nuclear organization - Nucleus, nucleolus and nucleoplasm.
5. Cell wall and cell membrane - (fluid mosaic model).
6. Cell organelles: Plastids, Mitochondria, Golgi complex, Lysosomes, Endoplasmic reticulum, Vacuoles, Ribosome and Centrioles (**ultrstructure and functions**).

Microbodies, cytoskeleton, cilia and flagella.

Unit 3 Structural organisation in Animals:

Chapter 10- Study of Animal Tissues

1. Animal tissues - types: a) Epithelial tissues - simple epithelium (squamous, cuboidal, columnar, Ciliated, glandular). - compound epithelium (stratified and transitional).
b) Connective tissue - (Areolar, Adipose, Tendons, Ligaments, Cartilage and Bone).

- c) Muscular tissue - (Smooth, striated and cardiac).
- d) Nervous tissue (Neurons, glial cells and types of neurons).

Chapter 11- Study of Animal Type:

- 1. Morphology, anatomy and functions of digestive, **circulatory, respiratory, nervous, and reproductive** systems of cockroach (**Brief account only**)

Unit 4 Human Physiology:

Chapter 12- Human Nutrition:

- 1. Digestion, absorption and nutritional disorders:
 - ii) Digestive system in brief
 - iv) Physiology of digestion, **gastrointestinal hormones, Peristalsis. Calorific value of proteins, carbohydrates and fats**
 - v) Absorption, assimilation **and egestion**
 - vi) Nutritional and digestive disorders – PEM, indigestion, constipation, Jaundice, **vomiting and diarrhoea**

Chapter 13- Human Respiration:

1 Breathing, respiration and common respiratory disorders:

Respiratory organs in animals (Recall only)

- i) Respiratory system in brief
- ii) Breathing- inspiration and expiration, **Regulation**
- iii) Exchange of gases, transport of CO₂ and O₂ and tissue respiration.

Regulation of Respiration, Respiratory volumes

- iv) Respiratory disorders- Asthma, **Emphysema** and occupational lung diseases.

Chapter 14- Human skeleton and Locomotion:

Brief account of human skeleton:

A] Axial Skeleton

B] Appendicular Skeleton

(Details to be dealt with the relevant practical)

Types of joints - synarthroses, amphiarthroses, and diarthroses.

Types of diarthroses - ball and socket, hinge, condyloid, pivot, saddle and gliding joints.

Types of Movement- Ciliary, Flagellar, Muscular

Mechanism of muscle movement: **Contractile proteins and Muscle contraction** Skeletal and muscular disorders – **Myasthenia gravis**, Osteoporosis, arthritis, muscular dystrophy tetany and **gout**.