



**ACTIVITIES:**

- o *Collect the specimens of plants and animals preserved by different methods*
- o *Prepare herbariums*

**UNIT - 1**

**Introduction to living world:** Properties of life or living things – Growth, development and reproduction, regulation and homeostasis - Diversity of Life – Major domains / kingdoms of living beings – Bacteria (Eubacteria), Archaea (Archebacteria) and Eukarya (Protista, Fungi, Plantae, Animalia) - Concepts of prokaryotes and eukaryotes, unicellular and multicellular organisms, plants and animals, sporophyte and gametophyte, monocots and dicots - Salient features, classification and alternation of generations of the plants of the following groups – Algae, Bryophytes, Pteridophytes, Gymnosperms and Angiosperms - Evolutionary relationships and differences among different kingdoms, viruses, viroids, prions and lichens and their special features

**UNIT - 2**

**Origin of life:** Theories of origin of life - Special creation, extra - terrestrial and spontaneous - Location of origin of life - Miller - Urey's experiment, Path of evolution of chemical molecules of living beings, theories of origin of cells – Endosymbiotic theory, Bubble theory – Evolution and eugenics – Nomenclature of living beings

**UNIT - 3**

**Cells:** Cell structure and organization of plants and animals - Cell theory and cell as the basic unit of life - Overview of the cell. Prokaryotic cells, ultra structure of plant cell (structure in detail and functions in brief) - Cell membrane, cell wall, cell organelles - Morphology and function: Endoplasmic reticulum, mitochondria, plastids, ribosomes, golgi bodies, vacuoles, lysosomes, microbodies, centrosome and centriole, cilia, flagella, cytoskeleton and nucleus, Cell cycle, Cell division

**UNIT - 4**

**Morphology of flowering plants:** Roots, Stems, Leaf, Inflorescence, Flower - Structure and parts of flower, types of flowers based on sex distribution, structural symmetry, position of gynoecium, aestivation - Description of types of calyx, corolla, stamens and ovary; Seed - Structure and organization of seed in monocots and dicots - Seed germination - Necessary conditions for germination

**UNIT - 5**

**Plant systematic:** Brassicaceae, Fabaceae, Poaceae- distribution, important plants, economic importance, vegetative and floral characters, pollination, fruit and seed characters. Role of animals in agriculture

---

## LABORATORY EXPERIMENTS

### LIST OF EXPERIMENTS

1. Disproving the theory of spontaneous generation of life – Pasteur's experiment
2. Structure and organization of plant cell
3. Selective permeability of cell membranes
4. Study of different types of plant cells - Parenchyma, collenchyma and sclerenchyma
5. Study of different types of plant tissues – Dermal, Vascular and Ground tissue
6. Study of mitosis through onion root tip cells
7. Study of meiosis through onion anther cells
8. External morphology of monocot roots - Rice and maize
9. External morphology of dicot roots - Brassica and any legume
10. External morphology and internal anatomy of monocot stem - Rice and maize
11. External morphology and internal anatomy of dicot stem - Brassica and any legume
12. External morphology of monocot leaf - Rice and maize
13. External morphology of dicot leaf – Brassica and any legume
14. Internal anatomy of ovary of monocots and dicots - Any millet and legume
15. Description of Brassicaceae, Fabaceae and Poaceae with live specimens

### REFERENCES:

1. Biology – Raven P, Mason Johnson G B, Losos J. B, Singer. S.S , 10<sup>th</sup> edition, 2014. McGraw Hill Publications
2. M.G. Simpson, 2006. *Plant systematics*. Elsevier Publication
3. H. C. Gangulee 1972. College Botany 4<sup>th</sup> edition
4. A.C. Dutta 1964. A class book of Botany, Oxford University Press, Calcutta
5. N. T. Gill. 1966. Agricultural Botany. 2<sup>nd</sup> edition

