## Part A - Botany
### Unit I: Biodiversity
- **1.1** Systematics: Two Kingdom and Five Kingdom Systems
- **1.2** Salient features of various Plant Groups (Algae, Fungi, Bryophytes, Pteridophytes and Gymnosperms)
- **1.3** Viruses
- **1.4** Bacteria

### Unit II - Cell Biology
- **2.1** Cell as the basic Unit of life.
- **2.2** Cell Theory
- **2.3** Prokaryotic and Eukaryotic Cell (Plant Cell)
- **2.4** Light Microscope and Electron Microscope (TEM & SEM)
- **2.5** Ultra Structure of Prokaryotic and Eukaryotic Cells

### Expected Specific Outcomes of Learning
- **1.1** Classifies Kingdom systems
- **1.2** Recognises salient features of plant groups
- **1.3** Analyses the characteristics of Virus
- **1.4** Analyses the characteristics of bacteria
- **2.2** Analyses Cell Theory
- **2.3** Discriminates between prokaryotes and Eukaryotes
- **2.4** Recognises uses of TEM, &SEM
- **2.5** Sees relationship between prokaryotic and Eukaryotic Cells

### Content in terms of Concepts
- Unit I: Biodiversity
  1.1 Systematics: Two Kingdom and Five Kingdom Systems
  1.2 Salient features of various Plant Groups (Algae, Fungi, Bryophytes, Pteridophytes and Gymnosperms)
  1.3 Viruses
  1.4 Bacteria
- Unit II - Cell Biology
  2.1 Cell as the basic Unit of life.
  2.2 Cell Theory
  2.3 Prokaryotic and Eukaryotic Cell (Plant Cell)
  2.4 Light Microscope and Electron Microscope (TEM & SEM)
  2.5 Ultra Structure of Prokaryotic and Eukaryotic Cells

### Curriculum Transactional Strategies
- **Uses appropriate charts and sketches on the black board and explains**
- **Explains the salient features using actual specimens and charts**

### Illustrations
- Appropriate sketches and Charts

### Evaluation
- 1. Describe the Two Kingdom & Five kingdom systems
- 2. Describe the salient features of plant groups
- 3. Differentiate between a Virion and a Bacterium
- 4. Draw ultra-structure of prokaryotic and Eukaryotic Cells and label the parts.

### Suggested No. of Periods
- 12 periods
### Standard XI

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<tbody>
<tr>
<td>2.7. Analyses plant membranes</td>
<td>2.6. Cell Wall</td>
<td>Explains with sketches</td>
<td>Appropriate Sketches</td>
<td>Describe with labeled sketches (Cell Organelles)</td>
<td>8 periods</td>
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<td>2.7. Cell Membrane (Fluid Mosaic Model) Membrane Transport Model.</td>
<td>Explains with sketches</td>
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<td>Draw &amp; Describe the stages of Mitosis &amp; Meiosis</td>
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<td>2.8 Cell organelles: Nucleus, Mitochondria, Plastids, Ribosomes</td>
<td>Explains with sketches and specimens</td>
<td>Labelled sketches &amp; Specimens of Modified Stems, Roots Leaves, etc.,</td>
<td>Explain the significance of Mitosis and Meiosis</td>
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<td>2.9. Cell Divisions: Amitosis, Mitosis &amp; Meiosis and their significance</td>
<td>Explains with sketches</td>
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<td>Describe the Mendel's Laws of inheritances with examples</td>
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<td>Unit III - Plant Morphology</td>
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<td>Describe Non-mendelian Inheritance with examples</td>
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<td></td>
<td>3.1. Structure and Modification of Root, Stem and Leaf</td>
<td>Explains Mendelian laws with sketches</td>
<td>Charts on Mendelism</td>
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<td>8 periods</td>
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<td>3.2 Structure and Types of Inflorescences</td>
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<td>3.3 Structure and Types of Flowers, Fruits and Seeds</td>
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<td>Unit IV - GENETICS</td>
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<td>4.1 Concept of Heredity and Variation</td>
<td>Explains with Sketches</td>
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<td>4.2 Mendel's Laws of Inheritance</td>
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### STANDARD

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<tbody>
<tr>
<td>4.3. to 4.5. Analyses various basis of Inheritance gives examples of Epistasis</td>
<td><strong>4.3</strong> Chromosomal basis of Inheritance</td>
<td>Explains with sketches on the BB</td>
<td>Labelled sketches</td>
<td>Explain Epistasis</td>
<td>12 periods</td>
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<td><strong>4.4</strong> Intermediate Inheritance (Incomplete Domiance)</td>
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<td><strong>4.5</strong> Epistasis</td>
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<td><strong>Unit - V PLANT PHYSIOLOGY</strong></td>
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<td><strong>5.1</strong> Cell as a Physiological Unit</td>
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<td>(a) Properties of Protoplasm</td>
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<td>(b) Water relations</td>
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<td>(c) Absorption and movement: Diffusion, Osmosis, Plasmolysis, Imbibition</td>
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<td>5.1. Analyses various physiological processes prescribed for study.</td>
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<td>Explains with sketches on the BB</td>
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<td>Experimental set-up on Osmosis</td>
<td>8 periods</td>
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<td>Explain Osmosis with an illustration</td>
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<td>Explain Plasmolysis with an example</td>
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<td>Explain Imbibition with an example</td>
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<td>5.2 Analyses various Theories of Water Transport</td>
<td>d) Permeability, Water Potential, 5.2 Theories of Water Transport : a) Root pressure b) Transpiration pull c) Factors affecting Rate of Transpiration d) Mechanism of Stomatal Opening and Closing (Potassium ion theory) Factors affecting Stomatal Movement</td>
<td>Explains the Theories of Water Transport Explains the Opening and Closing of Stomata Explains Root pressure with an Experimental Set-up.</td>
<td>Physiological experiments on Root Pressure and Transpiration</td>
<td>Explain the theories of Water Transport in Angiosperms</td>
<td>10 periods</td>
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<td>5.2 Analyses the Mechanism of Stomatal Opening and Closing</td>
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<td>5.3 Recalls Magor &amp; Trace elements &amp; their functions</td>
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<td>5.3 Analyses Biological Nitrogen Fixation</td>
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<td>6.1. Recognises different modes of reproduction in Angiosperms</td>
<td>Uniot VI - REPRODUCTION BIOLOGY</td>
<td>Describes mode of reproduction in Angiosperms</td>
<td>Charts on modes of reproduction in Angiosperms</td>
<td>Describe vegetative propagation with examples</td>
<td>10 periods</td>
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<tr>
<td>6.2 Analyses different types of pollination and fertilization</td>
<td>6.1 Modes of Reproduction in Angiosperms</td>
<td>Describes types of germination with sketches &amp; charts</td>
<td>Charts on Pollination and Double Fertilisation Actual process to be done by students themselves</td>
<td>Describe various types of Cross Pollination with examples</td>
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<td>6.3. (i) Recognises germination of seeds</td>
<td>a) Vegetative propagation (natural and artificial)</td>
<td>Germination of seeds</td>
<td>Germination of seeds</td>
<td>Explain Double Fertilisation with labelled sketches</td>
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<td>6.3. (ii) Discriminates between Hypogeal and Epigeal types of germination</td>
<td>b) Micropropagation</td>
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<td>Describe Hypogeal &amp; Epigeal types of germination with labelled sketches</td>
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<td>7.1 Recalls the factors that affect organisms in various types of environment</td>
<td>Unit VII- Environmental Biology</td>
<td>Describes various ecological factors and their effect on plant life</td>
<td>Experiments on the effect of various ecological factors on plants</td>
<td>Draw T.S. of stem and root of an Hydrophyte and label the parts.</td>
<td>10 periods</td>
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<td>7.2 Sees relationship between structural adaptations of Hydrophytes and Xerophytes</td>
<td>7.1 Organisms and their environment Factors: Air, Water, Soil, Temperature, Light and Biota</td>
<td>Enables learners to study various types of Hydrophites and Xerophytes and find out their adaptations</td>
<td>Collects Hydrophytes Xerophytes and label its parts</td>
<td>Draw T.S. of Leaf of Nerium and label its parts</td>
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<td>7.3 Recalls the different natural resources and their uses.</td>
<td>7.2 Hydrophytes, Mesophytes, Xerophytes and their adaptations</td>
<td>Explains Natural Resources and Conservation of water</td>
<td>Explain the Xerophytic adaptations in a selected plant.</td>
<td>Explain Hydrophytic adaptation in floating and submerged water plants.</td>
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<td>Recognises the need for Rain Water Harvesting (RWH)</td>
<td>7.3 Natural Resources - types, uses and misuse Conservation of water (RWH)</td>
<td>Visits RWH System in the local place.</td>
<td>Describe Natural Resources and steps taken to conserve water</td>
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