

DIRECTORATE OF SCHOOL EDUCATION, GOVERNMENT OF TAMILNADU, CHENNAI - 600 006.
BOTANY SYLLABUS

STANDARD XII

Unit - I Taxonomy of Angiosperms

Expected Specific Outcomes of Learning	Content in terms of Concepts	Curriculum Transactional Strategies	Illustrations	Evaluation	Suggested No. of Periods
1	2	3	4	5	6
<p>1.1 to 1.3.</p> <p>Analyses the Systems of Classification of plants</p> <p>Recalls uses of Herbaria develops skill in preparing Herbarium Sheets in a Scientific manner.</p> <p>Recalls Economic importance of plants from the prescribed families.</p> <p>Recalls Characteristic features of Taxonomic families prescribed for study.</p>	<p>Unit I: Taxonomy of Angiosperms</p> <p>1.1. Types of Classifications: Artificial, Natural, Phylogenetic</p> <p>a) Biosystematics</p> <p>b) Binomial Nomenclature</p> <p>c) Herbaria and their uses</p> <p>1.2. Bentham & Hooker's Classification of Plants</p> <p>1.3. Families : Malvaceae, Fabaceae, Rubiaceae, Asteraceae, Solanaceae, Euphorbiaceae, Liliaceae, Arecaceae and their Economic Importance</p>	<p>Discusses the classification of plants</p> <p>Discusses the salient features of Bentham and Hooker's Classification of Plants</p> <p>Describes the Taxomic features of selected Families using Specimens collected from the field.</p>	<p>Charts and Sketches and B.B.</p> <p>Actual Specimens from the prescribed families.</p>	<p>Describe the classification of plants according to Bentham & Hooker</p> <p>Describe the characteristic features of the Families at 1.3.</p>	20 periods

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Unit - II Plant Anatomy (10 periods)

Expected Specific Outcomes of Learning	Content in terms of Concepts	Curriculum Transactional Strategies	Illustrations	Evaluation	Suggested No. of Periods
1	2	3	4	5	6
<p>2.1 to 2.5.</p> <p>Recalls the anatomy of Dicot and monocot plants - Stem, Root, Leaf</p> <p>Draws Sketches of T.S. of the above from Microslides.</p>	<p>Unit II: <u>PLANT ANATOMY</u></p> <p>2.1. Tissues and Tissue Systems</p> <p>2.2. Anatomy of Dicot and Monocot Roots</p> <p>2.3. Anatomy of Dicot and Monocot Stems</p> <p>2.4. Anatomy of Dicot and Monocot Leaves</p> <p>2.5. Secondary growth in Dicot Stem</p>	<p>Discusses the anatomical features of monocots and dicots - Stem, Root and Leaf using charts and B.B. Sketches.</p>	<p>Appropriate Charts</p> <p>B.B. Sketches</p>	<p>Describe the anatomy of the Monocots and Dicots with reference to Stem, Root and Leaf</p>	<p>15 periods</p>

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STANDARD XII	Unit - III Cell Biology and Genetics (25 periods)				
Expected Specific Outcomes of Learning	Content in terms of Concepts	Curriculum Transactional Strategies	Illustrations	Evaluation	Suggested No. of Periods
1	2	3	4	5	6
<p>3.1 to 3.9.</p> <p>Recognises the chromosomes :</p> <p>Analyses the genetical concepts prescribed for study (3.2 to 3.9)</p> <p>Analyses DNA and RNA with ref. to structure and functions</p>	<p>Unit III: <u>CELL BIOLOGY AND GENETICS</u></p> <p>3.1. Chromosomes : Structure and types</p> <p>3.2. Genes and Genome</p> <p>3.3. Linkage and Crossing over</p> <p>3.4. Recombination of Chromosomes</p> <p>3.5. Mutation</p> <p>3.6. Chromosomal aberrations</p> <p>3.7. DNA as Genetic material</p> <p>Structure of DNA and its Replication</p> <p>3.8. Structure and types of RNA, Role of RNA in Protein Synthesis</p> <p>3.9. Genetic Code, Transcription, Translation</p>	<p>Discusses the genetical concepts prescribed for study with the help of Charts and B.B. Sketches</p>	<p>Charts and B.B. Sketches</p>	<p>Explain the Gene concept</p> <p>Explain the structure and replication of DNA Molecule</p> <p>Explain the Role of RNAs in Protein Synthesis</p>	<p>25 periods</p>

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STANDARD XII

Unit - IV Bio-Technology (30 periods)

Expected Specific Outcomes of Learning	Content in terms of Concepts	Curriculum Transactional Strategies	Illustrations	Evaluation	Suggested No. of Periods
1	2	3	4	5	6
<p>Analyses the innovations done in the field of Biotechnology</p> <p>Applies the Biotechnological innovations for Human development</p>	<p>Unit IV :</p> <p><u>BIO-TECHNOLOGY</u></p> <p>4.1. Recombinant DNA Technology</p> <p>4.2. Transgeneric plants and Microbes</p> <p>4.3. Plant Tissue Culture and Applications</p> <p>4.4. Protoplast Fusion</p> <p>4.5. Single Cell Protein (SCP)</p>	<p>Discusses the innovations in Biotechnology and their applications for Human development</p>	<p>Charts and pictures</p>	<p>Describe the innovations done in the field of Biotechnology and their applications</p>	<p>30 periods</p>

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Unit - V Plant Physiology (30 periods)

Expected Specific Outcomes of Learning	Content in terms of Concepts	Curriculum Transactional Strategies	Illustrations	Evaluation	Suggested No. of Periods
1	2	3	4	5	6
<p>5.2. Analyses the various aspects of the Biochemical Process of Photosynthesis</p> <p>5.2. (i) Analyses different modes of Heterotrophic Nutrition</p> <p>5.3. Analysis the various aspects of the Biochemical process of Respiration</p> <p>5.4. Analyses the effect of auxins and other growth regulating substances on plants - experiments</p> <p>4. Recalls Photoperiodism and Vernalisation</p>	<p>Unit V : PLANT PHYSIOLOGY 5.1. Enzymes : Classification, Properties, Mechanism and Action 5.2. Photosynthesis a) Significance b) Site of Photosynthesis, c) Photochemical and Biosynthetic phases d) Electron Transport System e) Photophosphorylation (cyclic and non-cyclic) f) C3 and C4 pathways g) Photorespiration h) Factors affecting Photosynthesis i) Mode of Nutrition Autotrophic Heterotrophic (Saprophytic, Parasitic & Insectivorous plants) j) Chemosynthesis 5.3. Respiration a) Mechanism b) Glycolysis c) Krebs Cycle d) Pentose Pathway e) Anaerobic Respiration f) Respiratory Quotient g) Compensation Point h) Fermentation 5.4. Plant Growth a) Growth Regulators b) Photohormones c) Auxins d) Gibberellins e) Cytokinins f) Ethylene g) ABA 5.5. Photoperiodism & Vernalisation</p>	<p>Discusses the Physiology of Photosynthesis from a Biochemical perspective</p> <p>Explains modes of Heterotrophic Nutrition</p> <p>Discusses the Physiology of Cellular Respiration</p> <p>Discusses the role of Auxins and other growth regulators on Plant Growth</p> <p>Present experimental data on Photoperiodism and Vernalisation for discussion</p>	<p>1. Charts and B.B. Sketches</p>	<p>Explain the Mechanism of Photosynthesis</p> <p>Explain the Mechanism of Cellular Respiration</p> <p>Explain the role of Auxins Gibberellins and other substances on plant growth</p>	30 periods

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STANDARD XII	Unit - VI Biology in Human Welfare (Restricted to Plants) (20 periods)				
Expected Specific Outcomes of Learning	Content in terms of Concepts	Curriculum Transactional Strategies	Illustrations	Evaluation	Suggested No. of Periods
1	2	3	4	5	6
<p>1. Analyses various measures undertaken on by Scientists with reference to application of Botany for Human Welfare</p> <p>2. Recognizes various economic importance of diversity of plants</p>	<p>Unit VI <u>Biology in Human Welfare (Restricted to Plants)</u></p> <p>6.1. Food Production Breeding Experiments Improved Varieties Role of Bio-Fertilizers</p> <p>6.2. Crop diseases and their control, Biopesticides</p> <p>6.3. Genetically Modified Food</p> <p>6.4. Bio-War</p> <p>6.5. Bio-Piracy</p> <p>6.6. Bio-Patent</p> <p>6.7. Sustained Agriculture</p> <p>6.8. Medicinal Plants including Microbes</p> <p>6.9. Economic Importance</p> <p>a) Food Yielding (Rice)</p> <p>b) Oil Yielding (Groundnut)</p> <p>c) Timber Yielding (Teak)</p>	<p>Explains various measures undertaken for Human Welfare through Biological Research</p> <p>Explains the Economic Importance of plants in the areas mentioned in the syllabus</p>		<p>1. Explain the Application of Biology Research for Human Welfare</p> <p>2. Explain the Economic Importance of plants for Human society</p>	<p>20 periods</p> <p>Total : 170 Periods</p>