

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

BOTANY SYLLABUS

Unit - I Biodiversity

STANDARD XI

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 Sees Relationship between 2 kingdom and 5 kingdom systems</p> <p>1.2. Recalls Salient features of various Plant Groups</p> <p>1.2. to 1.9.</p> <p>Recalls Salient features of plant Groups prescribed in the syllabus</p>	<p>Unit I: Biodiversity</p> <p>1.1. Systematics : Two Kingdom and Five Kingdom Systems</p> <p>1.2. Salient features of various Plant Groups (Algae, Fungi, Bryophytes, Pteridophytes and Gymnosperms)</p> <p>1.3. Viruses</p> <p>1.4. Bacteria</p> <p>1.5. Algae : Spirogyra</p> <p>1.6. Fungi : Mucor</p> <p>1.7. Bryophyta : Riccia</p> <p>1.8. Pteridophyta : Nephrolepis</p> <p>1.9. Gymnosperms : Cycas</p>	<p>1. Discusses the salient features of Systematics and various groups of plants prescribed for study.</p> <p>Explains the characteristic features of 1.3. to 1.9. with the help of Specimens, Charts and B.B. Sketches</p>	<p>Specimens of plants should be shown</p> <p>Appropriate Charts and B.B. Sketches using Colour Chalks</p>	<p>Explain systematic with reference to two and five Kindgom Systems</p> <p>Describe the salient features of plant groups given at 1.2.</p> <p>Describe the characteristic feataures of plant groups at 1.3. to 1.9.</p>	20 periods

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Unit - II Cell Biology (20 periods)

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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
2.1 Analyses cell theory 2.3. Differentiate Prokaryotic and Eukaryotic cells 2.4. Recalls the characteristic features of Light Microscope and Electron Microscope 2.5. Draw labelled Sketches of Pro and Eukaryotic cells 2.7. Analyses the Cell Membrane Theories 2.8. Analyses structure and function of Cell Organelles 2.9. Sees relationship between Mitosis and Meiosis. 2.9. Analyses the significance of Mitosis and Meiosis	Unit II:CELL BIOLOGY 2.1. Cell as the basic Unit of Life 2.2. Cell Theory 2.3. Prokaryotic and Eukaryotic cells (Plant Cell) 2.4. Light Microscope and Electron Microscope (TEM & SEM) 2.5. Ultra Structure of Prokaryotic and Eukaryotic Cells 2.6. Cell Wall 2.7. Cell Membrane (Fluid Mosaic Model) Membrane Transport Model 2.8. Cell Organelles : Nucleus, Mitochondria, Plastids, Ribosomes 2.9. Cell Divisions : Amitosis, Mitosis and Meiosis and their significance	1. Explains Cell Theory and describes cell structure with sketches 2. Describes the features of microscope with sketches 3. Explains the Cell Structure with the help of charts 4. Discusses the role of cell organelles with BB Sketches. 5. Explains the stages of Mitosis and Meiosis with the help of B.B. Sketches	1. Charts of Pro & Eukaryotic cells 2. Charts of Cell Organelles 3. Squash preparation of onion root tip observing stages of Mitosis in the Lab.	1. Explain the concept of Cell Theory 2. Draw labelled Prokaryotic and Eukaryotic cells 3. Explain the functioning of Light and Electron microscopes 4. Draw labelled sketches of ultrastructure of Prokaryotic and Eukaryotic cells 5. Explain the structure and function of Cell Organelles 6. Differentiate between Mitosis and Meiosis	20 periods

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Unit - III Plant Morphology (10 periods)

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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
3.1 Recalls the structure and modifications of parts of plants	<p>Unit III : Plant Morphology</p> <p>3.1. Structure and modifications of Root, Stem and Leaf</p> <p>3.2. Structure and types of Inflorescences</p> <p>3.3. Structure and types of flowers, fruits and seeds</p>	Describes the morphological features of parts of plants and their modifications with the help of actual specimens, Charts and B.B. Sketches.	Real specimens and charts	<ol style="list-style-type: none"> 1. Describe the modification of stem, root and leaf of Angiosperms 2. Describe the different types of inflorescences and flowers with Labelled Sketches. 	10 periods

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Unit - IV Genetics (10 periods)

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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
4.1 Analyses Mendelism 4.3. Analyses Chromosomal basis of Inheritance 4.4. Analyses Incomplete Dominance	<p>Unit IV:Genetics</p> <p>4.1. Concept of Heredity and Variations</p> <p>4.2. Mendel’s Laws of Inheritance</p> <p>4.3. Chromosomal basis of Inheritance</p> <p>4.4. Intermediate Inheritance (Incomplete Dominance)</p> <p>4.5. Epistasis</p>	<p>Explains using examples for Mendelism and non-Mendelian Inheritance</p> <p>Discusses Mendelism in the light of Chromosomal basis of Inheritance.</p> <p>Discusses Incomplete Dominance with examples.</p>	<p>Appropriate Sketches on the B.B.</p>	<ol style="list-style-type: none"> 1. Describe Mendels Laws of inheritance with checker board. 2. Explain Chromosomal basis of inheritance 3. Explain Incomplete Dominance with examples 	10 periods

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Unit - V Plant Physiology (30 periods)

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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>5.1 Recalls properties of Protoplasm</p> <p>5.4. Recalls the phenomena of Diffusion, Osmosis and Plasmolysis</p> <p>5.5. Analyses Theories of Water Transport</p> <p>5.6. Analyses Mechanism of Stomatal Opening and Closing</p> <p>5.7. Analyses the role of major and trace elements in plant life</p> <p>5.7. Analyses the Theories of Translocation of solutes</p> <p>5.7. Analyses the Biological Nitrogen Fixation</p> <p>5.8. Analyses different plant movements</p>	<p>Unit V: PLANT PHYSIOLOGY</p> <p>5.1. Cell as a physiological unit</p> <p>5.2. Properties of Protoplasm</p> <p>5.3. Water relations</p> <p>5.4. Absorption and movement (Diffusion, Osmosis, Plasmolysis)</p> <p>5.5. Theories of Water Transport a) Root pressure b) Transpiration pull c) Factors affecting rate of Transpiration</p> <p>5.6. Mechanism of Stomatal opening and closing (Potassium ion theory) Factors affecting Stomatal movement</p> <p>5.7. Mineral Nutrition : a) Functions of Minerals b) Essential major elements and trace elements c) Deficiency symptoms of elements d) Theories of Translocation e) Translocation of Solutes f) Nitrogen Metabolism and Biological Nitrogen Fixation</p> <p>5.8. Movements: a) Geotropism b) Phototropism c) Turgor Growth Movements (Tropic, Nastic & Nutation)</p>	<p>Explains Physiological processes using illustrations</p> <p>Explains using examples, illustrations and sketches on the BB</p> <p>Discusses various types of movements in plants and also the Mechanisms involved.</p>	<p>1. Experiments on Movements of Plant Parts</p>	<p>Describe the properties of Protoplasm . Explain Osmosis, and Plasmolysis with examples.</p> <p>Explain the Theories of Water Transport</p> <p>Explain the mechanism of Stomatal opening and closing</p> <p>Describe the role of major and trace elements in plant life.</p> <p>Explain the Theories of Translocation</p> <p>Explain biological Nitrogen Fixation with a sketch</p> <p>Explain Phototropic and Geotropic movements in plants with experiments</p>	<p>30 periods</p>

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Unit - VI Reproduction Biology (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>6.1. Recognises different modes of reproduction in Angiosperms</p> <p>Recognises different types of Pollination</p> <p>Analyses Double Fertilization</p> <p>Analyses the development of male and female gametophytes</p> <p>6.2. Recognizes types of germination of seeds - Hypogeal, Epigeal</p>	<p>Unit VI: REPRODUCTION BIOLOGY</p> <p>6.1. Modes of Reproduction in Angiosperms</p> <p>a) Vegetative propagation (natural and artificial)</p> <p>b) Micropropagation</p> <p>c) Sexual Reproduction</p> <p>i) Pollination : types</p> <p>ii) Double Fertilization</p> <p>d) Development of male and female gametophytes</p> <p>e) Development of Dicot Embryo</p> <p>f) Parthenogenesis and Parthenocarpy</p> <p>6.2. Germination of seeds</p> <p>a) Parts of seed</p> <p>b) Types of Germination</p> <p>c) Abscission & Senescence</p>	<p>Discusses using sketches on the BB and charts</p> <p>Discusses with sketches and actual experiments done as demonstration in the class room</p>	<p>Specimens for vegetative propagation</p> <p>Charts on Pollination, Fertilisation etc.,</p> <p>Germination experiments to be done as project work by the students</p>	<p>Describe modes of reproduction in plants</p> <p>Describe different types of Cross Pollination</p> <p>Explain Double Fertilization in plants</p> <p>Describe the development of dicot embryo, Parthenogenesis, and Parthenocarpy</p> <p>Describe Hypogeal and Epigeal types of germination with labelled Sketches.</p>	<p>30 periods</p>

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Unit - VII Environmental Biology (20 Periods)

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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>7.1. Relates ecological factors to plant life</p> <p>7.2. Analyses the adaptation of Hydrophytes and Xerophytes to their environments</p> <p>7.3. Recognises types of Natural Resources their uses and misuse</p> <p>7.4. Analyses ecosystems in terms of Energy Flow</p> <p>7.5. Analyses Hydrosere and Xerosere with reference to Plant Succession</p> <p>Cites examples of Hydrosere and Xerosere</p>	<p>Unit VII: <u>ENVIRONMENTAL BIOLOGY</u></p> <p>7.1. Organisms and environment as factors : Air, Water, Soil, Temperature, Light and Biota</p> <p>7.2. Hydrophytes, Mesophytes, Xerophytes and their adaptations</p> <p>7.3. Natural Resources Types, use and misuse Conservation of water (RWH)</p> <p>7.4. Ecosystems : a) Structure & Function b) Energy flow c) Decomposition d) Nutrient Cycling e) Major Biomes Forests Grasslands, Deserts</p> <p>7.5. Ecological Succession : Mechanism & Types (Hydrosere & Xerosere)</p>	<p>1. Discusses the role of ecological factors on plant life.</p> <p>2. Describes Hydrophytes and Xerophytes and their adaptations</p> <p>3. Describes RWH</p> <p>4. Explain Energy Flow in an Ecosystem with diagrams</p> <p>5. Describes Hydrosere and Xerosere with examples</p>	<p>Specimens of Hydrophytes and Xerophytes</p> <p>Charts on Energy Flow in an Ecosystem</p> <p>Charts on Hydrosere and Xerosere</p>	<p>Describe the adaptations of Hydrophytes</p> <p>Describe the adaptations of Xerophytes</p> <p>Explain Energy Flow in an ecosystem</p> <p>Describe Hydrosere and Xerosere with examples</p>	20 periods