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

BIOLOGY SYLLABUS

PART - A - BOTANY

STANDARD XII

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
1.1 Recalls types of classification of plants 1.2. Recalls Bentham and Hooker's classification of plants 1.3. Classifies plants from the prescribed families	**Unit I: <u>TAXONOMY OF ANGIOSPERMS</u>** **1.1. Types of classifications - Artificial, Natural, Phylogenetic** **a) Biosystematics** **b) Binomial Nomenclature** **c) Herbaria and their uses.** **1.2. Bentham and Hooker's Classification of plants** **1.3. Families : Malvaceae, Solanaceae, Euphorbiaceae, Liliaceae and Economic Importance**	Discusses the classification systems Describes the Taxonomic features of families	Charts and BB Sketches Charts and Sketches on the B.B.	Describe Bentham and Hooker's classification of plants Describe the Taxonomic families prescribed for study.	10 periods

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STANDARD XII

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. to 2.4. Descriminates between anatomy of monocots and Dicot with reference to stem and root. Recognises anatomy of Dicot Leaf	**Unit II: PLANT ANATOMY** **2.1. Tissues and Tissue Systems** **2.2. Anatomy of Monocot and Dicot Roots** **2.3. Anatomy of Monocot and Dicot Stems** **2.4. Anatomy of Dicot Leaf**	Explains the anatomy of Dicot and Monocot plants with charts and Sketches on the B.B.	Charts and BB Sketches Charts and B.B. Sketches	Describe the Anatomy of Dicots and Monocots i) Stem (ii) Root Draw labelled sketches of T.S. of Stem and Root. Describe the anatomy of a Dicot Leaf. Draw labelled sketches of the T.S. Dicot Leaf.	10 periods

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STANDARD XII

Unit - III Cell Biology and Genetics

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. - 3.3 Analyses Genome, Linkage and Crossing over. 3.4 - 3.6 Analyses Mutation with refference to different types 3.7 - 3.8. Analyses DNA and RNA with reference to structure and function	**Unit III: <u>CELL BIOLOGY & GENETICS</u>** **3.1. Chromosomes : Structure and Types** **3.2. Genes and Genome** **3.3. Linkage and Crossing over - Gene Mapping** **3.4. Recombination of Chromosomes** **3.5. Mutation** **3.6. Chromosomal aberrations** **3.7. DNA as Genetic Material : Structure of DNA, Replication of DNA** **3.8. Structure of RNA and its types**	Explains Chromosomes, Genes Genome and related phenomena Discusses the structure and function of DNA and RNA with labelled sketches and appropriate Charts and Models.	Charts and BB Sketches	Explain the genetical phenomena given at 3.1. to 3.6. Explain structure of DNA & its Replication Explain the types of RNA and their functions	10 periods

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PART - A - BOTANY

STANDARD XII

Unit - IV Biotechnology

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. - 4.5. Analyses various Biotechnological innovations	**Unit IV: BIOTECHNOLOGY** **4.1. Recombinant DNA Technology** **4.2. Transgeneric Plants and Microbes** **4.3. Plant Tissue Culture and its Applications** **4.4. Protoplast fusion** **4.5. SCP**	Discusses Biotechnological innovations with examples and Sketches on the B.B. Uses slides on Biotechnological innovations and explains in the Class Room.		Explain the innovations in Biotechnology	10 periods

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BIOLOGY SYLLABUS

PART - A - BOTANY

STANDARD XII

Unit - V Plant Physiology

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
5.1. Analyses the Biochemical process of Photosynthesis with reference to different aspects Recognises Parasites, Saprophytes and Insectivorous plants	**Unit I: <u>PLANT PHYSIOLOGY</u>** **5.1. Photosynthesis :** **a) Significance** **b) Site of Photosynthesis** **c) Photochemical and Biosynthetic phases** **d) Electron Transport System** **e) Photophosphorylation (Cyclic andNon-cyclic)** **f) C3 and C4 pathways** **g) Photorespiration** **h) Factors affecting Photosynthesis** **i) Mode of Nutrition :** **Autotrophic** **Heterotrophic** **(Saprophytic, Parasitic & Insectivorous plants)**	Discusses the Biochemical process of Photosynthesis with Charts and BB sketches Describes Heterotrophic modes of nutrition in certain plants.	Appropriate Charts and B.B. Sketches	1. Explain the Biochemical process of Photosynthesis	15 periods

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PART - A - BOTANY

STANDARD XII

Unit - V Plant Physiology

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
5.2. Analyses Cellular Respiration Discriminates between Aerobic and Anaerobic types of Respiration 5.3. Analyses Plant Growth with reference to role of chemical substances 5.4. Recalls the phenomena of Photoperiodism and Vernalisation 5.5. Sees Relationship between Photosynthesis and Respiration	**j) Chemosynthesis** **5.2. Respiration :** **a) Mechanism** **b) Glycolysis** **c) Krebs cycle** **d) Pentose Pathway** **e) Anaerobic Respiration** **f) Respiratory Quotient** **g) Compensation Point** **h) Fermentation** **5.3. Plant Growth Growth Regulators** **Phytohormones** **Auxins** **Gibberellins** **Cytokinins** **Ethylene** **ABA** **5.4. Photoperiodism and Vernalisation**	Discusses the aerobic and anaerobic respiration Discusses the effect of auxins and plant growth regulators on plants Explains Photoperiodism and Vernalisation		2. Explain the Biochemical process of Cellular Respiration 3. Explain the process of Plant Growth with ref. to chemical substances	10 periods

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PART - A - BOTANY

STANDARD XII

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
6.1. Recognises various measures undertaken for Human Welfare through study of Botany 6.2.and 6.3. Analyses the inventions done towards human welfare Adopting researches in Biology and Botany 6.4. to 6.6. Awareness of Problems and Difficulties with reference to Biological aspects of Human Welfare 6.7. to 6.9. Analyses the various economic important plants (showing the real specimens)	**Unit VI :** **BIOLOGY IN HUMAN WELFARE** **6.1. Food production** **• Breeding** **• Experiments** **• Improved Varieties** **• Role of Bio-fertilizers** **6.2. Crop diseases and their control Biopesticides** **6.3. Genetically Modified Food** **6.4. Bio-War** **6.5. Bio-Piracy** **6.6. Bio-Patent** **6.7. Sustained Agriculture** **6.8. Medicinal plants including Microbes** **6.9. Economic Importance** **a) Food yielding (Rice)** **b) Oil yielding (Groundnut)** **c) Fiber Yielding (Cotton)** **d) Timber yielding (Teak)**	Discusses the role of Biological innovations for Human Welfare Discusses the sociological aspects for human welfare and Development through Biological and Agricultural Research Discusses the economic importance of selected plants with reference to the topics included		Describe the measures undertaken to improve crop production and other economically important plants. Describe any five Medicinal plants available commonly and describe their uses.	10 periods