



BOTANY

UNIT-1 VIRUS, BACTERIA, PHYCOLOGY, MYCOLOGY

VIRUS-

Discovery, Structure, Virus infection in plants, and symptoms, Transmission of plant Viruses, Genome Organisation, Replication of Bacteriophages, Economic Importance.

BACTERIA-

Discovery, General Characteristic Features, Cell Structure, nutrition, reproduction, Techniques in Sterilization and Bacterial Culture, Economic importance.

PHYCOLOGY –

General characters, Classification (F.E.Fritsch) Thallus Organisation, Life Cycle Patterns, pigmentation, Evolutionary Trends in The sexuality of Algae – Economic importance.

Structure and reproduction, life cycle of the following algae: Anabaena, Nostoc, Spirulina, Diatoms, Chlamydomonas, Oedogonium.

MYCOLOGY-

General Characteristics, Thallus Organisation, Classification (Alexopolus), Nutrition, Reproduction, Economic importance.

Structure, reproduction and Life cycle of the following: Rhizopus, Agaricus, Puccinia, Cercospora.

UNIT-2 LICHENOLOGY, BRYOLOGY, PTERIDOLOGY

Lichenology-

General characteristics, Thallus Organisation, Reproduction, occurrence, Classification, Ecological importance, Mycorrhiza (Ectomycorrhiza & Endomycorrhiza)

Bryology-

General characters, Classification, structure and reproduction, Economic importance, structure and Life history of Marchantia, Riccia and Polytrichum

Pteridology-

General characters – Classification, based on Smith, Structure and life history of Psilotum, Lycopodium, Selaginella, stelar organisation, Heterospory and seed habit, Economic importance.

UNIT-3 GYMNOSPERMS, PALEOBOTANY, EVOLUTION.

Gymnosperms-

General characters, classification (Sporne, 1954), Structure & reproduction, Economic importance, Life history of cycas, pinus and Gnetum.

Paleobotany-

Geological time scale – era, period, epoch, fossilization methods – fossil types – Radio carbon dating, contributions of Birbal Sahni.

Evolution-

Origin of Life, Theories of Evolution – Darwin, Lamarck and De Vries.

UNIT-4 ANGIOSPERM - MORPHOLOGY, TAXONOMY AND ECONOMIC BOTANY

Angiosperm morphology-

Root system – Modifications, shoot system – Modifications, Leaf – simple, Compound- phyllotaxy, Modifications of leaf.

Inflorescence – types, Flowers – parts, Aestivation, Placentation, fruits – types and classification.

Taxonomy –

Classification of Angiosperms – Artificial, natural, phylogenetic, Herbarium – techniques, Botanical Nomenclature, Botanical Survey of India.

Study of the following families based on the natural system poaceae, cucurbitaceae, asteraceae, solanaceae, Arecaceae, Euphorbiaceae, Leguminosae, Lamiaceae & Economic importance of the above families.

Economic Botany-

Source, Cultivation methods and economically important products of rice, sugarcane, cotton, groundnut.

UNIT-5 ANATOMY AND EMBRYOLOGY

ANATOMY-

Meristems and types, simple permanent tissues, complex permanent tissues (xylem, phloem), Tissue systems & types, Secondary growth, Anomalous Secondary Growth, primary structure of root, stem and leaf of dicots & monocots, Kranz anatomy.

EMBRYOLOGY-

Microsporangium, microsporogenesis and development of male gametophyte, Megasporangium, types, Megasporogenesis, development of female gametophyte - Monosporous, Bisporous, tetrasporous, Double fertilization, triple fusion, types of endosperm, Embryo development in dicot & monocots, Apomixis, polyembryony, anther and embryo culture technique.

UNIT -6 MICROBIOLOGY, PLANT PATHOLOGY

Microbiology-

History and scopes of microbiology, Introduction to microbial world – protozoa, bacteria, viruses, mycoplasma, economic importance of bacteria, culture methods and techniques, Fermentation and antibiotic production.

PLANT PATHOLOGY-

History of plant pathology, symptomatology of Fungal, viral, bacterial pathogens host defence.

Name the causative organisms, etiology and control measure of the following diseases Blast of rice, wilt of cotton, canker of citrus, powdery mildew disease, Red rot of sugarcane, Tikka of groundnut, Little leaf of brinjal, Bunchy top of banana.

UNIT -7 PLANT PHYSIOLOGY, BIOCHEMISTRY, BIOPHYSICS

PLANT PHYSIOLOGY: -

Water relations of plants – Imbibition, Diffusion, Osmosis, plasmolysis, Mechanism of Water absorption – Ascent of sap, Transpiration – Types, Significance, Mechanism, Factors affecting it, Guttation.

Photosynthesis- C₃, C₄ CAM pathways.

Respiration – Aerobic, Anaerobic, Glycolysis, Krebs's cycle, Electron transport chain, photorespiration Nitrogen Metabolism – Source of nitrogen, Methods of nitrogen Fixation – Metabolism - Symbiotic, non-symbiotic, Nitrogen Cycle.

Physiology of flowering - photoperiodism – plant growth substances, chemical nature and physiological functions of auxins, Gibberellins, cytokinins, ethylene, ABA and Brassinosteroids.

BIOCHEMISTRY: -

Biopolymers, carbohydrates, Lipids, proteins, nucleic acids and their monomers.

Enzymes- properties, classification, mode of action-factors affecting enzymes.

BIOPHYSICS: -

Laws of thermodynamics – Concept of free energy, ATP as high energy compound- photo physiology – Light emission – fluorescence, phosphorescence, Bioluminescence, light absorption

UNIT-8 CYTOLOGY, GENETICS, PLANT BREEDING, HORTICULTURE

CYTOLOGY: -

Cell organisation – prokaryotic & Eukaryotic cells, Cell membrane, Cell cycle, mitosis, Meiosis, Amitosis, Cell Organelles – Occurrence, Structure, Function and Origin of ER, Golgi body, Lysosomes, Ribosomes, Mitochondria and chloroplast,

Chromosome- Structure, types, polytene & lampbrush.

GENETICS: -

Mendelism, Monohybrid, Dihybrid crosses, Laws of Mendel, Incomplete dominance, Interaction of factors and genes, Linkage & crossing over, Multiple alleles, Mutations, sex determination in Plants.

PLANTBREEDING: -

Principles involved in plant breeding Methods of crop improvement – Selection, hybridisation Introduction, acclimatization, Heterosis – cause and effects, polyploidy in breeding, Hybridisation technique employed in Cotton, paddy & sugarcane

HORTICUTURE: -

Scope of Horticulture – Classification of Horticulture plants – fruits, Vegetables, ornamentals, Garden design & types – Rockery. Bonsai, Kitchen Garden, Lawn making, Floriculture, Cultivation of commercial plants – Jasmine, Propagation methods, cutting, grafting, Layering, Budding.

UNIT-9 PLANT ECOLOGY, ENVIRONMENT, CONSERVATION BIOLOGY, PHYTOGEOGRAPHY**PLANT ECOLOGY: -**

Biotic and Abiotic Factors, plant Succession, Ecological adaptations, Xerophytes, hydrophytes, Epiphytes.

Food chain, Food web, Energy flow- Types of eco system, Ecological pyramids, Nutrient cycles,

ENVIRONMENT: -

Pollution – Air, Water, Soil, Causes and Consequence, Green house effect, Global warming, ozone depletion, acid rain and their impacts, remedial measures – Green building.

CONSERVATION BIOLOGY: -

Natural resource and its conservation (Insitu, Exsitu), Brief account of National and International agencies of conservation – Afforestation.

PHYTOGEOGRAPHY: -

Principles – Vegetation types of India, Tropical evergreen forests, Deciduous forest, Mangrove vegetation and scrub jungle with reference to Tamil Nadu – Raunkiaer's life form, Remote sensing of vegetation photo interpretation.

UNIT-10 PLANT BIOTECHNOLOGY, BIOINFORMATICS, MOLECULAR BIOLOGY**PLANT BIOTECHNOLOGY: -**

History & Scope, Applications of plant biotechnology, Bio fertilizers, Biopesticides, antibiotics, Recombinant Vaccines, Insulin and Interferons – Bio remediation.

Plant tissue culture – Applications of plant tissue Culture, Vectors – Plasmid, Bacteriophages, viral vectors, cosmids, Restriction enzymes, rDNA technology, Development of transgenic plants with reference to insect resistance, edible Vaccines, pros and cons of genetically Modified food (GM food).

BIOINFORMATICS: -

Databases and tools – Biological database 'NCBI' model primary & Secondary databases – BLAST - proteomics and tools, Homology modelling.

MOLECULAR BIOLOGY: -

Nature and function of genetic materials – Nucleic acid – DNA, RNA, Replication of DNA, RNA types, Transcription, protein synthesis, codons, anticodons, gene regulation in prokaryotes – Lac Operon.

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 JAYALAKSHMI R MARK 91	 RAJESHWARI K MARK 91	 SINDHU P MARK 91	 MALA C MARK 90	 GOVINDARAJU N MARK 90	 CHANDRA MAHESWARI B MARK 90	 KALAVANI G MARK 90	 SHAJUTHA A MARK 90
 SURESH P MARK 90	 RAJENDIRAN R MARK 90	 VIDYA M MARK 90	 BRINDHA P MARK 90	 PANDISELVI T MARK 90	 ASWINI S MARK 89	 BALASUBRAMANIAM T MARK 89	 NITHYA A MARK 89
 SHABEENA BANU S MARK 89	 SASIKALA S MARK 89	 SILAMBARASAN T MARK 89	 MUTHURANI C MARK 89	 CHITRADEVI T MARK 88	 NILAVU M MARK 88	 KARTHIKAILAKSHMI A MARK 88	 MAHITHAL I MARK 88
 SATHIYA T MARK 88	 NAHEEDHA BANU A MARK 88	 SELVADURAI S MARK 88	 ABITHA P MARK 88	 ARUL MOZHI M MARK 88	 SARANYA G MARK 88	 FATIMA MARY S MARK 87	 MURTHY G MARK 81
 YUVARANI P MARK 87	 LOGANAYAGI G MARK 87	 SATHISKUMAR C MARK 87	 PRIYADARSHINI M MARK 87	 SURESH M MARK 86	 AYISHA M MARK 86	 SARATHAMANI K MARK 84	 AMEENA M MARK 77
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 MARK 101.5	 MARK 100.5	 MARK 98	 MARK 98	 MARK 97.5	 MARK 97.5	 MARK 97.5	 MARK 96.5
 MARK 96.5	 MARK 95.5	 MARK 95.5	 MARK 95	 MARK 95	 MARK 94.5	 MARK 94.5	 MARK 93.5
 MARK 91.5	 MARK 91.5	 MARK 91.5	 MARK 90	 MARK 89	 MARK 88.5	 MARK 88.5	 MARK 88.5
 MARK 88.5	 MARK 87	 MARK 86.5	 MARK 86.5	 MARK 86.5	 MARK 86.5	 MARK 86.5	 MARK 85.5
 MARK 85.5	 MARK 85	 MARK 84.5	 MARK 84.5	 MARK 84	 MARK 83.5	 MARK 83	 MARK 81.5
 MARK 80.5	 MARK 78.5	 MARK 78.5	 MARK 77.5	 MARK 77.5	 MARK 77	 MARK 75.5	 MARK 75.5
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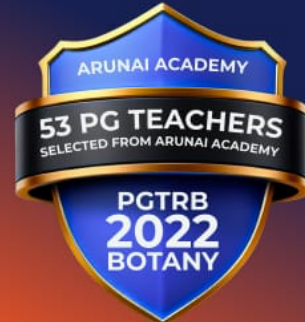
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 SELVAM R MARK 92	 DILIPAN S MARK 92	 MOHANAPRIYA B MARK 92	 A MANIVEL MARK 91	 E PUSHPA MARK 91	 SARAVANAN R MARK 91	 PARITHA B MARK 91	 S THANGAMANI MARK 91
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 ARIVUMATHI M MARK 89	 PARTHASARATHY MARK 88	 V GOPI MARK 88	 GOVINDHAMMAL MARK 88	 SHALINI S P MARK 88	 E DHANASEKARAN MARK 88	 THENMOZHI N MARK 88	 B JEEVA MARK 87
 VIJAYA M MARK 87	 GUNASELVAM K MARK 87	 KRISHNAVENI M MARK 87	 SURESH R MARK 87	 ESAISELVI S MARK 87	 S SENTHAMARAI MARK 86	 POONGKUZHALI R MARK 86	 UMA A MARK 86
 P AMUTHA MARK 86	 NATARAJAN B MARK 86	 BHUVANESHWARI S MARK 86	 MANIRAJ R MARK 84	 KUPPUSAMY A MARK 82	 GOPAL C MARK 82	 MAHESWARI C MARK 81	 K RAJALAKSHMI MARK 80

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🎯 **2024 UGTRB Botany – 68 Candidates Selected**

🏆 Secured State 1st, 2nd & 3rd Ranks

🎯 **2022 PGTRB Botany – 53 Candidates Selected**

🏆 Secured State 2nd, 3rd & 4th Ranks

🎯 **2019 & 2017 PGTRB Botany – 58 Candidates Selected**

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