

Botany

DEGREE STANDARD

UNIT I

Phycology, Mycology & Lichenology

Phycology - Fritsch's classification of Algae - pigmentation - Thallus organization - Life - cycles pattern of Algae - Evolutionary trends in the Sexuality of algae - Economic importance - Algae as food, feed fodder, fertilizer and medicines - phytoplankton and their role.

Mycology - classification of fungi by Alexopoulos - structure, reproduction and economic importance of phycomycetes, Ascomycetes, Basidiomycetes and Deuteromycetes.

Lichenology - structure, reproduction and economic importance of lichens.

UNIT II

Bryology and Pteridology

Bryophytes - general characteristics, structure; reproduction and alternation of generations.

Pteridophytes - general characteristics - Psilopsida, Lycopsida, Sphenopsida and Pteropsida - Stellar organisation - origin of heterospory and seed habit.

UNIT III

Gymnosperms and Paleobotany

A comparative account of vegetative and reproductive structure of Cycadales, Coniferales and Gnetales - Structure of wood in Gymnosperm - Economic importance of Gymnosperm - Paleo Botany Geological Time Scale - Fossilization methods - Fossil types.

UNIT IV

Angiosperm Morphology, Taxonomy and Economic Botany

Root and Stem modification in relation to habitat. Inflorescence: Raceme, Cyme and special types

Pollination - contrivances for cross pollination.

Taxonomy - Angiosperm Classification - Bentham and Hooker's system - International code of Botanical Nomenclature (outline).

Family characteristics and economic importance of the following:-

- 1) Magnoliaceae
- 2) Rutaceae
- 3) Anacardiaceae
- 4) Leguminosae
- 5) Asteraceae
- 6) Apiaceae
- 7) Euphorbiaceae
- 8) Arecaceae
- 9) Poaceae

Economic Botany of plants yielding wood timber fibre, Oil and medicines.

UNIT V

Anatomy and Embryology

Anatomy:- Meristems and its types. Permanent tissues simple and complex tissues - normal and

abnormal secondary thickening

Embryology:- Micro sporogenesis, Megaspороgenesis - types of embryo sacs (Mono-bi-and tetrasporic). Double fertilization and Triple fusion, Types of endosperm - Embryos development in Dicots and Monocots. Apomixis and Polyembryony Culture techniques - anther and embryo.

UNIT VI

General Microbiology and Plant Pathology

Morphology, reproduction and economic importance of Bacteria. Viruses - Bacteriophages, cyanophages, Mycophages. Their general structure and multiplication. Mycoplasma - structure. Fermentation and antibiotic production.

Plant Pathology:- Name of the causative organism, etiology and control measures of the following plant diseases:-

- 1) Paddy Blast
- 2) Cotton wilt
- 3) Citrus canker
- 4) Powdery mildew
- 5) Red rot of sugarcane
- 6) Little leaf of Brinjal
- 7) Bunchy Top of Banana
- 8) Early and late Blights of Potato
- 9) Rust and smut diseases.

UNIT VII

Physiology, Biochemistry and Biophysics

Physiology:- Water relations of plants - absorption and translocation of water and minerals - mineral nutrition - Photosynthesis, Photochemical reactions and carbon fixation pathways - Respiratory metabolism - aerobic and anaerobic. Enzymes - Role as biocatalysts - Nitrogen Metabolism - Nitrogen cycle - Nitrogen fixation - Nitrate reduction. Plant growth substances chemical nature and physiological functions of auxins, gibberellins, cytokinins, ethylene and abscisic acid.

Biochemistry and Biophysics

Biopolymers:- A brief account of Carbohydrates, lipids, Proteins and nucleic acids and their monomers. An elementary account of thermodynamic - definition of energy - structure and role of ATP.

UNIT VIII

Cytology, Genetics and Evolution

Cytology:- Organization of prokaryotic and eukaryotic cells. Cell organelles - structure and function.

Chromosomes - morphology structure and role. Cell division - Mitosis and Meiosis.

Genetics:- Mendelism - Interaction of factors - linkage and crossing over, multiple, alleles, mutation, structure replication and role of nucleic acids.

Evolution:- Origin of life: Theories of evolution Darwin - Lamarck and de Vries.

UNIT IX

Ecology, Environment and Conservation Biology

Ecology:- Ecosystem concept - plant communities - Hydrophytes, Xerophytes, Mangroves. Plant succession primary and secondary - climax formation.

Environment:- Pollution of water, air and land, Garbage disposal, Environmental Protection Agencies, Pollution monitoring and control.

Conservation Biology:- Conservation and sustainable development/ Productivity of Soil, forests and natural resources.

UNIT X

Horticulture and Plant breeding

Horticulture:- Importance and scope of Horticulture Classification of horticultural plants - fruits, vegetables and ornamentals.

Garden design and types:- Rockery, Bonsai, Kitchen garden, Lawn making, Floriculture. Cultivation of Commercial Flowers - Jasmine - plant propagation methods - cutting, grafting, layering (Rose) budding, stock - scion relations, in Mango,

Plant Breeding:- Hybridization techniques Plant breeding methods employed in the following:-

- 1) Cotton
- 2) Sugarcane
- 3) Paddy