

BOTANY
(UG - DEGREE STANDARD)

CODE NO: 268

UNIT – I : PHYCOLOGY, MYCOLOGY & LICHENOLOGY

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

Mycology - Classification of fungi (Alexopoulos and Mims 1979) - structure, reproduction and economic importance of Phycomycetes, Ascomycetes, Basidiomycetes and Deuteromycetes.

Lichenology - structure, reproduction and economic importance of lichens.

UNIT- II : BRYOLOGY AND PTERIDOLOGY

Byrophytes - 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 Gymnosperms – Paleobotany, 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 – Types, Agents (Biotic and Abiotic) and contrivances promoting cross pollination.

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

Characteristics features and Economic importance of the following families:-

- 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 types. Permanent tissues, Simple and Complex tissues - Normal and Abnormal secondary thickening.

Embryology:- Microsporogenesis, Megasporogenesis - types of embryo sacs (Mono-bi- and tetrasporic). Double fertilization and Triple fusion, Types of Endosperm - Embryo 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 structures 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) Blast of Paddy
- 2) Wilt of Cotton
- 3) Citrus Canker
- 4) Powdery Mildew
- 5) Red rot of Sugarcane
- 6) Little leaf of Brinjal
- 7) Bunch 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 respiration. 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, abscissic acid and Brassinosteroids.

Biochemistry and Biophysics

Biopolymers: A brief account of Carbohydrates, Lipids, Proteins and Nucleic acids and their monomers. An elementary account of thermodynamics - 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 their role. Cell division: Mitosis and Meiosis.

Genetics: Mendelism - Interaction 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: water, air and land, Garbage disposal, Environmental Protection Agencies, Pollution monitoring and control.

Ecosystem: Components and functions – Global warming, Green house effect, Ozone Layer Depletion

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 crops:-

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