BOTANY- SYLLABUS

Unit-1

Algae- General Characteristics, Organization of Thallus, Cell-structure, reproduction, alternation of generation, economic importance.

Structure, reproduction and life cycle of *Chlamydomonas*and *Spirogyra*.

Fungi - General Characteristics, organization of thallus, reproduction, alternation of generation, economic importance.

Structure reproduction and life cycle of *Yeast*, *Mucor* and *Rhizopus.*

Plant Diseases- Late blight of Potato, Smutand Rust of Wheat, Citrus canker, Mosaic disease of Tobacco.

Viruses- General Characteristics , size and shape,structure, reproduction. Bacteriophages : Types, multiplication, (lytic & lysogenic cycle).

Bacteria- *Archaea* – General features, cell structure.

Eubacteria – Morphology, internal structure,transformation, conjugation and transduction.

Cyanobacteria- General characteristics, cell structure, reproduction and economic importance.

Unit – II

Bryophytes - General Characteristics, alteration of generations, economic importance.

Structure and reproduction of *Riccia*, *Anthoceros* and*Sphagnum*.

Pteridophyte - General characteristics, Alternation of generations, stellar evolution, heterospory and seed habit.

General morphology, anatomy and reproduction of *Psiolotum*, *Selaginella*and*Marsilea*.

Gymnosperm- General morphology, anatomy and reproduction of *Cycas* and *Pinus*.

Unit – III

Morphology of Angiosperm

Roof, Stem and their modifications. Leaves and their types, venation and modification; Phyllotaxy, inflorescence; structure of flower, floral diagram and floral formula.Important features of the families Cruciferae, Fabaceae, Malvaceae, Poaceae.

Anatomy

Anatomy of typical dicot stems, roots and leaves. Secondary growth and anomalous secondary growth of stems.

Embryologyof angiosperms : Microsporangium, male gametophyte, Megasporangium, female gametophyte Pollination, Fertilization, Sexual incompatibility, Endosperm, Embryo, seed development, structure and types of seeds, seed dispersal, seed dormancy and germination.

Unit – IV

Plant Physiology :

Water relations, absorption of water ascent of sap, transpiration mineral nutrition, translocation of organic solutes.

Biochemistry:

Enzymes, respiration, Photosynthesis, Photorespiration and nitrogen metabolism.

Plant growth and growth hormones :

Photoperiodism, Vernalisation, Auxins, Gibberellins, Cytokinin, Abscissic Acid.

Ecology :

Ecological factors. Ecological adaptations hydrophytes, Halophytes, Xerophytes, Epiphytes ;

Plant Succession :

Hydrosere, xerosere Biogeochemical Cycles.Ecosystem- structure and function, Major ecosystems.

Environmental Pollution :

Air, water and noise pollution and their control measures.

Unit – V

Cell Biology :

Cell structure – Cell wall, cell membrane, plastids, mitochondria, chloroplastGolgibodies, Glyoxisomes, Peroxisomes, ribosomes, nucleus, chromosome, cell cycle – mitosis, meiosis.

Molecular Biology

DNA as the genetic material, structure and replication of DNA, Structure and types of RNA. Transcription, Translation, Regulation of gene action in Prokaryotes and Emkaryotes.

Genetics

Mendel's laws of inheritance, Gene interactions. – Complementary factor, Supplementaryfactor and Epistasis.

Linkage, Gene Mapping.

Extra nuclear inheritance, Mutation and Mutagenic agents, polyploidy.

Plant Biotechnology :

Plant tissue culture and techniques.Clonal propagation.Somaclonal variation, protoplast isolation and somatic hybridization .

Transgenic plants :

Agrobacterium mediated gene transfer, direct gene transfer, insect resistant transgenic plants (BT).