

SUBJECT: BOTANY

1. **Origin of life** : Basic ideas on origin of earth and origin of life.
2. **Biological Evolution**: General account of biochemical and biological aspects of evolution speciation.
3. **Cell Biology**: Cell structure, function of organelles, Mitosis, meiosis, significance of meiosis. Differentiation, senescence and death of Cells.
4. **Tissue System**: Origin, development, structure and function of primary and secondary tissues.

5. **Genetics:** Laws of inheritance, concept of gene and genetic code, Linkage, Crossing over gene mapping, Mutation and polyploidy, Hybrid Vigour, sex determination, Genetics and plant improvement.

6. **Plant Diversity:** Structure and function of plant from evolutionary aspect (Viruses to angiosperms including lichens and fossils).

7. **Plant Systematics :** Principles of nomenclature, classification and identification, Modern approaches in plant taxonomy.

8. **Plant Growth and Development :** Dynamics of growth, Growth movement, Growth substances, Factors of morphogenesis, Mineral nutrition , Water relations, Elementary knowledge of photosynthesis, Respiratory metabolism. Nitrogen metabolism, nucleic acids and proten synthesis, Enzymes, Secondary metabolites, Isotopes in biological studies.

9. **Methods of Reproduction and seed biology :** Vegetative , asexual and sexual method of reproduction, Physiology of flowering, pollination and fertilization, Sexual incompatibility. Development, structure dormancy and germination of seed.

10. **Plant Pathology:** Knowledge of diseases of rice wheat, sugarcane, potato, mustard, groundnut and cotton crops, principles of biological control, Crown gall.

11. **Plant and Environment :** Biotic components, Ecological adaptation, types of Vegetational zones and forests of India, Deforestation, aforestation social forestry, Soil erosion, wasteland reclamation, Environmental pollution bioindicators. Plant introduction.

12. **Botany- A Human Concern:** Importance of conservation Germplasm resources, endangered, threatened and endemic taxa, Cell tissue organ and protoplast cultures in propagation and enrichment of genetic diversity, plants as sources of food, fodder forage, fibers, fatty oils, drugs, wood and timber paper rubber beverages, Spices essential oils and resins, gums, dyes insecticides, pesticides and ornamentation.

Biomass as a source of energy , Biofertilizers, technology, in agrihorticulture medicine and industry