

Based on Unified Syllabus of Botany for U.P.State Universities

(B.Sc. I, II, & III year)

All syllabi are effective from July , 2018 Revised on 13.03.2018

Theory Paper's duration is of Three hours and duration of practicals is Four hours

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| B.Sc. I Year | | |
| Papers | Title of Paper | Max. Marks |
| Paper I | Diversity of Viruses, Bacteria & Fungi | 50 |
| Paper II | Diversity of Algae, Lichens, & Bryophytes | 50 |
| Paper III | Diversity of Pteridophytes & Gymnosperms | 50 |
| Practical | Practical Syllabus based on theory papers | 50 |
| B.Sc. II Year | | |
| Papers | Title of Paper | Max. Marks |
| Paper I | Diversity of Angiosperms: Systematics, Development & Reproduction | 50 |
| Paper II | Cytology, Genetics, Evolution & Ecology | 50 |
| Paper III | Plant Physiology and Biochemistry | 50 |
| Practical | Practical Syllabus based on theory papers | 50 |
| B.Sc. III Year | | |
| Papers | Title of Paper | Max. Marks |
| Paper I | Plant Resource Utilization, Palynology, Plant Pathology and Biostatistics | 50 |
| Paper II | Molecular Biology & Biotechnology | 50 |
| Paper III | Environmental Botany | 50 |
| Practical | Practical Syllabus based on theory papers | 50 |

Grand Total

600

At least one Field trip in B.Sc. II is compulsory.

Unified Syllabus of Botany for U.P.State Universities
Subject- Botany
B.Sc. - Third Year
Practical

Time: 4.00 hrs

Max Marks: 50

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| 1- Biotechnology exercise (Tissue culture based)/ Plant diseases | 8 Marks |
| 2-Environmental Pollution analysis/ Biostatistics exercise | 8 Marks |
| 3-Temporary Mount/ Diagram (Pollen grains) | 5 Marks |
| 4-Structure of Different Molecules/soil types | 4 Marks |
| 5- Identify and Comment upon spots (1-5) | 10 Marks |
| 6- <i>Viva-Voce</i> | 5 Marks |
| 7- Practical class record | 5 Marks |
| 8- Collection of Model, Chart, Project etc. | 5 Marks |
| Total Marks | 50 |

B.Sc. III year

Paper I Plant Resource utilization, Palynology, Plant Pathology and Biostatistics M.M. 50 marks

Unit I

Centres of diversity of plants, origin of crop plants. Domestication and introduction of crop plants. Basic concepts of Plant Breeding, hybridization, heterosis. Concepts of sustainable development; cultivation, production and uses of - wheat, rice, legumes, sugarcane

Unit II

A general account of plants yielding oils, spices, beverages. An account of major fiber, medicinal, petro, plants of Uttar Pradesh.

Unit III

Etiology of viral, bacterial, fungal and insect-pest diseases: mosaic diseases on tobacco, and cucumber, yellow vein mosaic of bhindi; citrus canker, potato scab, little leaf of brinjal; damping off of seedlings late blight of potato, red rot of sugarcane
Integrated pest disease management

Unit IV

An introductory knowledge of palynology, morphology, viability and germination of pollens. Classification of data, mean, median and mode. Standard deviation, standard error, variance, correlation, χ^2 test and experimental designs

Paper II: Molecular biology and biotechnology

M.M. 50

Unit – I

Nucleic acid as genetic material, nucleotides, structure of nucleic acids, properties of genetic code, codons assignments, chain initiation of codons mechanism of protein synthesis and its regulation.

Unit - II

Replication of DNA in prokaryotes and eukaryotes, gene expression and regulation. Hormonal control and second messengers Ca^{2+} , Cyclic AMP, IP_3 etc.

Unit- III

Introduction to biotechnology, recombinant DNA technology, biotechnology and healthcare, IPR issues.

Unit- IV

Plant tissue culture, methods of gene transfer, transgenic plants, , microbial and environmental biotechnology.

Paper III- Environmental botany

M.M. 50

Unit - I

Mineral resources of planet earth, Conservation of mineral resources. soils; types, properties and various problem soils; water; the source of water, physico-chemical and biological properties of water. Sustainable management of water; energy resources in India; Forests: global forest wealth, importance of forests, deforestation.

Unit - II

Environmental pollution : air, water, soil, radioactive, thermal and noise pollutions, their sources, effects and control. (greenhouse effect, ozone depletion and acid rain). CO₂ enrichment and climate change.

Unit - III

Biodiversity and Phytogeography : biotic communities and populations, their characteristics and population dynamics. Natural vegetation of India, static and dynamic plant geography, basic principles governing geographical distribution of plants, endemism.

Unit - IV

Conservation of plants resources for agriculture and forestry.

In situ conservation sanctuaries, national parks, biosphere reserves, wetlands, mangroves.

Ex situ conservation; botanical gardens, field gene banks, seed banks, cryobanks.