

B.Sc. III year
From - 2013-14

Paper I:	Plant resource utilisation, Palynology and Biostatistics	M.M. 75
Paper II:	Molecular biology & biotechnology	M.M. 75
Paper III:	Environment Botany and Plant Pathology	M.M. 75

(There will be 9 questions in each paper and candidate has to attempt only 5 questions. Q.1 will be compulsory based on Units I - IV. Two questions will be set from each unit of which one question has to be attempted. All questions will carry equal marks)

Practicals: Based on papers I-III M.M. 75

Paper I Plant Resource utilization, Palynology and Biostatistics 75 marks

Unit I

Centres of diversity of plants, origin of crop plants. Domestication and introduction of crop plants. 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

Conservation of plants resources for agriculture and forestry.

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

Exsitu conservation; botanical gardens, field gene banks, seed banks, cryobanks.

Unit IV

An introductory knowledge to palynology, morphology, viability and germination of pollens.

Classification of data, mean, median and mode. Standard deviation, standard error, variance, co-relation, X^2 test and experimental designs

Paper II: Molecular biology and biotechnology

M.M. 75

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

Structure and properties polysaccharides, aminoacids, proteins, vitamins and hormones; Enzymes: active sites, specificity, mechanisms, factors, general aspects of enzyme kinetics. Bioenergetics: Laws of thermodynamics, concept of Gibb's free energy, high energy compounds.

Unit - III

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

Unit- IV

Introduction to biotechnology, recombinant DNA technology, plant tissue culture, methods of gene transfer, transgenic plants, biotechnology and healthcare, microbial and environmental biotechnology.

Paper III- Environmental botany and plant pathology

M.M. 75

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). CO_2 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

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