K.G. ARTS & SCIENCE COLLEGE RAIGARH (C.G.)

SYLLABUS - 2016-17 & 2017-18

BOTANY

Code- 1500/

B.Sc. Semester – I

Diversity of Microbes and Cryptogams

M. Marks 75

Unit-I

Viruses and mycoplasma: – General account of viruses and mycoplasma, general account of TMV and bacteriophage.

Bacteria: structure, nutrition, reproduction and economic importance; general account of cyanobacteria.

Unit-2

Algae: general characters, classification and economic importance; important features and life history of Chlorophyceae — *Volvox, Oedogonium;* Charophyceae – *Chara,* Xanthophyceae — *Vaucheria;* Phaeophyceae —*Ectocarpus,* Rhodophyceae — *Polysiphonia.*

Unit-3

Fungi: general characters classification and economic importance; Important features and life history of Mastigomycotina- *Phytophthora; Pythium* Zygomycotina – *Mucor,* *Ascomycotina: Aspergillus,* *Peziza; Basidomycotina — Puccinia, and Agaricus Deurteromycotina — Cercospora, Colletotrichum; general account of lichens.*

Unit-4

Bryophyta: classification, study of morphology, anatomy, reproduction of Hepaticopsida (e.g.Riccia, Marchantia and Pellia), Anthrocerotopsida (e.g. Anthoceros), Bryopsida (e.g. Funaria).

Unit-5

Pteridophyta: important characters and classification, stelar organization, morphology and anatomy of Rhynia .. Structure, Anatomy and reproduction in Lycopodium, Selaginella, Equisetum, Marsilea and Pteris.

1. Nandy 03.12.16
2. 3.12.16
3. Suranjana 3.12.16
4. 8.12.16
5. 03.12.16
6. 3/12/16
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K.G. ARTS & SCIENCE COLLEGE RAIGARH (C.G.)

SYLLABUS – 2016-17 & 2017-18

BOTANY

Code 15002

B.Sc. Semester – II

Cell Biology & Genetics

M. Marks 75

Unit-1

The Cell envelops; plasma membrane; Different models for organization of plasma membrane, structure and functions of the cell Wall.

Structure and function of cell organelles: Golgi body ER, peroxisomes, Vacuoles, chloroplast and mitochondria.

Structure and function of nucleus: Ultra structure: Nuclear membrane; Nucleolus.

Unit-2

Chromosome organization; Morphology; Centromere and telomere, special types of chromosomes.

Variations in chromosomes structure: Deletions, Duplications, Translocations, Inversions; Variation in Chromosome number, Aneuploidy, Polyploidy.

Cell division- mitosis, meiosis.

Unit-3

DNA the genetic material, DNA structure, Replication the Nucleosome model satellite and repetitive DNA.

Extranuclear genome; presence and function of mitochondrial and plastid DNA, Plasmids.

Unit-4

The structure of gene, Genetic code, Transfer of genetic information; Transcription, Translation, Protein Synthesis, tRNA, Ribosomes,

Regulation of gene expression in Prokaryotes and Eukaryotes.

Unit-5

Genetic in heritance; Mendelism; laws of segregation and independent assortment; Linkage interactions of genes.

Genetic variations; Mutations, Spontaneous and induced; transposable elements; DNA damage and repair.

1. Nandy 03.12.16
2. 3.12.16
3. Suranjana 3.12.16
4. 3.12.16
5. Singh 03.12.16
6. Rajesh 3/12/16
7. Pramod
8. 3/12/16

B.Sc Sem I + Sem II Pract Code - 15008

Syllabus according to theory paper B.Sc I sem. I & sem II

K.G. ARTS & SCIENCE COLLEGE RAIGARH (C.G.)

B.Sc. Semester III - 2017-18 & 2018-19

BOTANY

Semester — III

Code 45003

(DIVERSITY OF SEED PLANTS AND THEIR SYSTEMATICS)

UNIT-1 Characteristics of seed plants : evolution of the seed habit ; seed plants with (angiosperms) and without (gymnosperms) fruits ; fossil and living seed plants. General features of gymnosperms and their classification : evolution and diversity of gymnosperms : geological time scale, fossilization and fossil gymnosperms.

UNIT-2 Morphology of vegetative and reproductive parts : anatomy of roots, stem and leaf, reproduction and life cycle of Pinus, Cycas and Ephedra.

UNIT-3 Angiosperms : origin and evolution, some examples of primitive angiosperms.

Angiosperm taxonomy- Brief history, aims, and fundamental components, identification, keys, taxonomic literature.

UNIT-4 Botanical nomenclature- Principles and rules, taxon, rank, type concept principle of Priority

Classification of angiosperms : salient features of the systems proposed by Bentham and Hooker and Engler and Prantl.

Major contributions of cytology, phytochemistry and taximetrics to taxonomy.

UNIT-5 Diversity of flowering plants : General account of the families Ranunculaceae, Brassicaceae, Malvaceae, Rutaceae, Fabaceae, apiaceae, Acanthaceae, Apocynaceae, Asclepiadaceae, Solanaceae, Lamiaceae, Chenopodiaceae, Euphorbiaceae, Liliaceae and Poaceae.

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1. Nandy 03.12.16
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3. Sarangana 3.12.16
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7. Parmar
8. 3/12/16

K. G. ARTS & SCIENCE COLLEGE RAIGARH (C.G.)

B.Sc. Semester-IV -2017-18 & 2018-19

BOTANY

Semester - IV

Running paper

Code-15004

PLANT STRUCTURE DEVELOPMENT AND REPRODUCTION

UNIT-I The basic body plan of a flowering plant : modular type of growth. Diversity in plant form in annuals, biennials and perennials ; convergence of evolution of tree habit in gymnosperms, monocotylendons and dictoyledons ; trees-largest and longest-lived organisms.

UNIT-2 The shoot system : the shoot apical meristem and its histological organization : vascularization of primary shoot in monocotyledons and dicotyledons ; formation of internodes, branching pattern : monopodial and sympodial growth ; canopy architecture ; cambium and its functions ; formation of secondary xylem, a general account of wood structure in relation to conduction of water and minerals ; characteristics of growth rings, sapwood and heart wood ; role of woody skeleton ; secondary phloem – structure-function relationship, periderm.

UNIT-3 Leaf : origin, development, arrangement and diversity in size and shape ; internal structure in relation to photosynthesis and water loss ; adaptations to water stress ; senescence and abscission.

The root system : the root apical meristem ; differentiation of primary and secondary tissues and their roles ; structural modification for storage, respiration, reproduction and for interaction with microbes.

UNIT-4 Flower : a modified shoot ; structure, development and varieties of flower, functions. structure of anther and pistil, the male and female gametophytes ; types of pollination ; attraction and rewards for pollinators ; pollen-pistil interaction, self incompatibility, double fertilization, formation of seed-endosperm and embryo ; fruit development and maturation.

UNIT-5 Significance of seed : suspended animation : ecological adaptation : unit of genetic recombination and replenishment, dispersal strategies.

Vegetative reproduction : vegetative propagation, grafting, economic aspects

1. Nandy 03.12.16
2. Balram 3.12.16
3. Suranganna 3/12/16
4. 3.12.16
5. Singh 03.12.16
6. Rajesh 3/12/16
7.
8. 3/12/16

Code 15009

B.Sc Sem III + Sem IV Practical

syllabus. according to theory
paper of B.Sc Sem III & Sem IV

K.G. ARTS & SCIENCE COLLEGE RAIGARH (C.G.)

B.Sc. Semester-V - 2018-19 & 2019-20

BOTANY

Semester - V

Code - 15006

PLANT PHYSIOLOGY, BIOCHEMISTRY AND BIOTECHNOLOGY

M.M. :

UNIT-I Plant-water relations : Importance of water to plant life ; physical properties of water; diffusion and osmosis; absorption, transport of water and transpiration ; physiology of stomata.
Mineral nutrition : Essential macro and micro-elements and their role ; mineral uptake; deficiency and toxicity symptoms.

UNIT-II Transport of organic substances : Mechanism of phloem transport ; source-sink relationship ; factors affecting translocation.
Basic of enzymology : Discovery and nomenclature ; characteristics of enzymes ; concept of holoenzyme apoenzyme, coenzyme and cofactors ; regulation of enzyme activity, mechanizm of action.
Photosynthesis : Significance ; historical aspects ; photosynthetic pigments ; action spectra and enhancement effects ; concept of two photosystems; Z-scheme ; photophosphorylation ; Calvin cycle ; C4 pathway ; CAM plants ; photorespiration.

UNIT-III Respiration : ATP - the biological energy currency ; aerobic and anaerobic respiration; Kreb's cycle, electron transport mechanism (chemi-osmotic theory) ; redox potential; oxidative phosphorylation ; pentose phosphate pathway.
Nitrogen and lipid metobolism : Biology of nitrogen fixation ; importance of nitrate reductase and its regulations ; ammonium assimilation ; structure and function of lipids; fatty acid biosynthesis ; Beta-oxidation ; saturated and unsaturated fatty acids; storage and mobilization of fatty acids.

UNIT-IV Growth and development : Definitions ; phases of growth and development ; kinetics of growth, seed dormancy, seed germination and factors of their regulation ; plant movements ; the concept of photoperiodism ; physiology of flowering ; florigen concept; biological clocks ; physiology of senescence, fruit ripening ; plant hormones auxins, gibberellins, cytokinins, abscisic acid and ethylene, history of their discovery, biosynthesis and mechanism of action ; photomorphogenesis ; phytochromes and cryptochromes, their discovery, physiological role and mechanism of action.

UNIT-V Genetic engineering : Tools and techniques of recombinant DNA technology ; cloning vectors ; genomic and cDNA library ; transposable elements ; techniques of gene mapping and chromosome walking.
Bio technology : Functional definition ; basic aspects of plant tissue culture ; cellular totipotency, differentiation and morphogenesis ; biology of Agrobacterium ; vectors for gene delivery and marker genes ; salient achievements in crop biotechnology.

1. Nandy 03.12.16
2. 3.12.16
3. Surangma 3.12.16
4. 3.12.16
5. 03.12.16
6. 3/12/16
8. 3/12/16

Code-15007

K.G. ARTS & SCIENCE COLLEGE RAIGARH

B.Sc. Semester VI - 2018-19 & 2019-20

BOTANY

Semester VI

ECOLOGY AND UTILIZATION OF PLANTS

M.M. :

UNIT-I Plants and environment : Atmosphere (gaseous composition), water (properties of water cycle), light (global radiation, photosynthetically active radiation), temperature, soil (development, soil profiles, physico-chemical properties), and biota. Morphological, anatomical and physiological responses of plants to water (hydrophytes and xerophytes), temperature (thermoperiodicity), light (photoperiodism, heliophytes and sciophytes) and salinity.

UNIT-II Community Ecology : Community characteristics, frequency, density, cover, life forms biological spectrum ; ecological succession.
Ecosystems : Structure, abiotic and biotic components ; food chain, food web, ecological pyramids, energy flow ; biogeochemical cycles of carbon, nitrogen and phosphorus.

UNIT-III Population ecology : Growth curves ; ecotypes ; ecads.
Biogeograp hical regions of India.
Vegetation types of India : Forests and grasslands.

UNIT-IV Utilization of Plants
Food plants : Rice, wheat, maize, potato, sugercane.
Fibres : Cotton and jute.
Vegetable oils : Groundnut, mustard and coconut
General account of sources of firewood, timber and bamboos.

UNIT-V Spices : General account.
Medicinal plants : General account
Beverages : Tea and coffee.
Rubber.

1. Nandy 03.12.16

2. Salmi 3.12.16

3. Suranga 3.12.16

4 3.12.16

5 Singh 03.12.16

6 Rajesh 3/12/16

7. Laxmi

8. Patel 3/12/16

H

Code - 150010

B.Sc Sem V + Sem VI Practical

Syllabus according to theory paper of B.Sc Sem V & Sem VI

CBCS
Extra-Optional
paper
Theory
Code-15005

K.G.ARTS AND SCIENCE COLLEGE RAIGARH
B.Sc.BOTANY SEMESTER –IV (Optional)
PLANT MORPHOLOGY AND ANATOMY

UNIT –I-Introduction of plant morphology and anatomy , morphology of typical plant ,general information of various plant parts ,tissue system in plants, meristematic tissue, permanent tissue, simple tissue, complex tissue, secretory tissue, glandular tissue and laticiferous tissue, theories regarding apical meristem.

UNIT –II-ROOT-General characteristics of root, morphology of root ,types of root ,root modification, anatomical characteristics of root, anatomy monocotyledonous root, anatomy of dicotyledonous root ,difference in monocotyledonous and dicotyledonous root ,lateral root formation ,secondary growth in root,

UNIT –III-STEM-General characteristics of stem, morphology of stem, branching pattern, modification in stem, anatomical characteristics of stem ,anatomy of monocotyledonous stem ,anatomy of dicotyledonous stem ,difference in monocotyledonous and dicotyledonous stem, secondary growth in monocotyledonous stem ,secondary growth in dicotyledonous stem.

UNIT –IV-LEAF-Morphology of leaf , phyllotaxy, types of leaf ,modification in leaf, anatomy of petiole ,anatomy of monocotyledonous leaf, anatomy of dicotyledonous leaf, difference in monocotyledonous and dicotyledonous leaf ,leaf differentiation ,stomata structure and function trichome structure and function ,senescence and abscission.

UNIT–V- INFLORESCENCE AND FLOWER-Morphology and types of inflorescence, flower, floral parts ,structure ,types and aestivation of calyx and corolla, structure and types of androecium and gynoecium, Placentation.

Dr A.K. Bharti
Dr N.K. Singh
Upasana Singh
Rajesh Patel
Shyamgama Cheedhury
Pooja Patel

CBCS
Extra Optional
Paper
Practical

Code - 15009

K.G. ARTS AND SCIENCE COLLEGE RAIGARH

B. Sc. Semester- IV- Practical work-

1. Morpholoy of root, stem ,leaf

2.Modification in root, stem , leaf

3.Internal structure of root

4.Internal structure of stem

5.Intenal structure of leaf

6.Permanent slide

7.Working of lab techniques

Dr A.K. Bhart

Upasana Singh

Rajesh Patel

Swarangana Chandhury

Pooja Patel

Dr N.K. Singh

K.G. ARTS & SCIENCE COLLEGE, RAIGARH (C.G.)

M.Sc. (PREVIOUS) BOTANY

SESSION ..2016-17 & 2017-18.

SEMESTER I PAPER – I

MOLECULAR BIOLOGY & CYTOLOGY

The dynamic cell : Structural organization of the plant cell, specialized plant cell types;

Cell wall : Structure,ultrastructure and function:

Plasma membrane: Structure, ultrastructure,composition models, and functions;

Plasmodesmata: Structure, role in movement of molecules.

Chloroplast: Structure, ultrastructure,composition, functions

Mitochondria: Structure, ultrastructure, composition , functions

Nucleus: Structure, nuclear pores; nucleosome organization;nucleolous;

Ribosomes : Structure, ultrastructure, composition, types and function

Other cellular organelles ; Structure, and functions of microbodies, golgi apparatus, lysosomes, endoplasmic reticulum

DNA : Structure, ultrastructure, composition, types, models, replication.

RNA: Structure, ultrastructure, composition, types, models.

Cell division: Mitosis & Meiosis.

1 Nandy 03-12-16

2 03.12.16

3. Surangama 3.12.16

4. 3.12.16

5. Rajesh 3/12/16

6 Singh 03.12.16

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8 3/12/16

K.G. ARTS & SCIENCE COLLEGE, RAIGARH (C.G.)

M.Sc. (PREVIOUS) BOTANY

SESSION ....2016-17 & 2017-18

SEMESTER I PAPER – II

GENETICS & CYTOGENETICS

GENETICS OF PROKARYOTES AND EUKARYOTIC ORGANELLES:

Bacteriophage genome, phage phenotype, genetic recombination in phage, genetic transformation conjugation and transduction in bacteria. Genetics of mitochondria and chloroplast, cytoplasmic male sterility.

GENE STRUCTURE AND EXPRESSION:

Genetic fine structure, Gene expression in prokaryotes & eukaryotes, Gene concept, regulation of gene expression in prokaryotes and eukaryotes.

GENETIC RECOMBINATION AND GENETIC MAPPING:

Recombination, independent assortment and crossing over, molecular mechanism of recombination, role of Rec A and Rec B C D enzymes, Gene mapping, chromosome mapping. linkage groups. Genetic markers,

MUTATIONS:

Spontaneous and induced mutations; physical and chemical mutagens; DNA damage and repair mechanism, initiation of cancer at cellular level, protooncogene and oncogenes.

MOLECULAR CYTOGENETICS:

Chromosome - Morphology, ultrastructure, composition, function, special types Alteration in Chromosome - Structural and numerical changes in chromosome.

1. Nandy 03.12.16
2. 3.12.16
3. Surangama 3.12.16
4. 3.12.16
5. Rajesh 3/12/16
6. Singh 03.12.16
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8. 3/12/16

K.G. ARTS & SCIENCE COLLEGE, RAIGARH (C.G.)

M.Sc.(PREVIOUS) BOTANY

SESSION .... 2016-17 & 2017-18

SEMESTER I PAPER – III

ALGAE, FUNGI AND MICROBES.

MICROBIOLOGY:MICROBES

General account, ultra structure,nutrition and reproduction, biology and economic importance of Bacteria, Cyanobacteria, Viruses and Mycoplasma.

PHYCOLOGY: ALGAE

General characters habitats, systematic study of range of structure, organization, reproduction, classification economic importance, phylogeny and interrelationships of following groups of Algae, Chlorophyta, Charophyta,Xanthophyta ,Bacillariophyta, Phaeophyta and Rhodophyta.

MYCOLOGY: FUNGI

General character and reproduction of fungi, classification, nutrition and economic importance of fungi, General account of following groups of Fungi- Mastigomycotina, Zygomycotina, Ascomycotina, Basidiomycotina and Deuteromycotina.

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1. Nandy 03-12-16
2. 3.12.16
3. Sarangama 3.12.16.
4. 8.12.16
5. 3/12/16
6. Singh 03.12.16
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8. 3/12/16

K.G. ARTS & SCIENCE COLLEGE, RAIGARH (C.G.)

M.Sc.(PREVIOUS) BOTANY

SESSION . ..2.0.1.6...1.7. & 2017-18

SEMESTER I PAPER – IV

BRYOPHYTA & PTERIDOPHYTA

BRYOPHYTA:

General characters, structure, distribution, reproduction classification and life history of follow-ing group of Bryophytes-Marchantiales, Jungarmaniales, Anthocerotales, Sphagnales, Funariales and Polytrichales, mentioning its economic importance and ecological importance.

PTERIDOPHYTA:

General character, reproductions, classification of following groups of Pteridophytes-Psilopsida, Lycopsida, Sphenopsida, Pteropsida, and Fossil Pteridophytes.A special mention must be made about evolution of stele, heterospory and origin of seed habit in pteridophyta.

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1. Nandy 03.12.16
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3. Suvangama 3.12.16
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6. Singh 03.12.16
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K.G. ARTS & SCIENCE COLLEGE. RAIGARH (C.G.)

M.Sc.(PREVIOUS) BOTANY

SESSION ... 2016-17 & 2017-18

SEMESTER II PAPER – I

GYMNOSPERMS

GYMNOSPERMS:

Inroduction : gymnosperms,the vessel-less and fruitless seed plants varying in the structure of their sperms,pollen grains,pollen germination and the complexity of their female gametophyte; evolution of gymnosperms.

Classifications of Gymnosperms and their distributions in India

Brief account of the families of pteridospermales (Lyginopteridaceae,Medullosaceae, Caytoniaceae and Glossopteridaceae).

General Account of Cycadeoidales and Cordaitales

Struture and reproducation in Cycadales, Ginkgoales, Coniferales, Ephedrales, Welwitschiales and Gnetales.

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1. Nandy 03.12.16
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K.G. ARTS & SCIENCE COLLEGE RAIGARH (C.G.)

M.Sc. (Previous) BOTANY

SEMESTER II PAPER II

SESSION - ..2016-17.. & 2017-18

TAXONOMY OF ANGIOSPERMS

The Species Concept –

Taxonomic hierarchy, species, genus family and other categories, principles used in assessing relationship, delimitation of taxa and attribution of rank. Salient features of the International code of Botanical Nomenclature.

Taxonomic evidence –

Morphology, anatomy, polynology, embryology, Cytology, Phytochemistry, genome analysis and nucleic acid hybridization.

Taxonomic Tools –

Herbarium, floras, histological, cytological, phytochemical, serological, biochemical and Molecular techniques, computer and GIS.

Angiosperm Classification System –

Bentham and Hooker, Engler and Prantl, Hutchinson, Cronquist, Takhtajan

Plant Families :–

Dicotyledones – Polypetalae –

Ranunculaceae, Annonaceae, Magnoliaceae, Nymphaeceae, Papaveraceae, Cruciferae, Capparidaceae, Caryophyllaceae, Malvaceae, Tiliaceae, Rutaceae, Meliaceae, Anacardiaceae, Leguminosae, Rosaceae, Combrytaceae, Myrtaceae, Cucurbitaceae, Umbelliferae.

Dicotyledones – Gamopetalae –

Rubiaceae, Compositae, Apocynaceae, Asclepiadaceae, Convolvalaceae, Solanaceae, Acanthaceae, Verbenaceae, Labiatae

Incompletae / Monochlamydae –

Nyctaginaceae, Polygonaceae, Amaranthaceae, Chenopodiceae, Euphorbiaceae, Moraceae.

Monocotyledones –

Orchidaceae, Musaceae, Liliaceae, Commelinaceae, Palmae, Araceae, Cyperaceae, Graminneae

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1. Nandy 03.12.16
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3. Surangama 3.12.16
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K.G. ARTS & SCIENCE COLLEGE, RAIGARH (C.G.)

M.Sc.(PREVIOUS) BOTANY

SESSION ...2016-17 & 2017-18

SEMESTER II PAPER – III

PLANT PHYSIOLOGY

Plant Growth and Plant movement:-
General account of plant growth, factors affecting growth, General account of plant movement- Tactic, Tropic, Nastic.

Fundam entals of enzymology:

General aspects, allosteric mechanism, regulatory and active sites, isozymes, kinetics of enzymatic catalysis, Michaelis-Menten equation and its significance.

Membrane transport and translocation of water and solutes :

Plant-water relation, water absorption, ascent of sap, transpiration, mineral absorption, nutrient uptake, comparison of xylem and phloem transport, phloem loading and unloading, passive and active solute transport, membrane transport proteins.

The flowering process :

Photoperiodism and its significance, endogenous clock and its regulation, floral induction and development – genetic and molecular analysis, role of vernalization.

Stress physiology:

Plant responses to biotic and abiotic stress, mechanisms of biotic and abiotic stress tolerance, HR and SAR, water deficit and drought resistance, salinity stress, metal toxicity, freezing and heat stress, oxidative stress.

1. Nandy 03-12-16
2. 3/12/16
3. Surangama 3.12.16
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7. Pramod
8. 3/12/16

K.G. ARTS & SCIENCE COLLEGE, RAIGARH (C.G.)

M.Sc.(PREVIOUS) BOTANY – –

SESSION .....2016-17 & 2017-18

SEMESTER II PAPER – IV

PLANT METABOLISM

Photochemistry and Photosynthesis:

General concepts and historical background, evolution of photosynthetic apparatus, photosynthetic pigments and light harvesting complexes, photooxidation of water, mechanisms of electron and proton transport, carbon assimilation – the Calvin cycle, photorespiration and its significance, the C4 cycle, the CAM pathway,

Respiration and lipid metabolism :

Overview of plant respiration, glycolysis, the TCA cycle, electron transport and ATP synthesis, pentose phosphate pathway, glyoxylate cycle, alternative oxidase system, structure and function of lipids, fatty acid biosynthesis, synthesis of membrane lipids, structural lipids and storage lipids and their catabolism.

Nitrogen fixation, nitrogen and sulphur metabolism :

Overview, biological nitrogen fixation, nodule formation and nod factors, mechanism of nitrate uptake and reduction, ammonium assimilation, sulphate uptake, transport and assimilation.

Sensory photobiology

History of discovery of phytochromes and cryptochromes and their photochemical and biochemical properties,

Plant growth regulators and elicitors :

Physiological effects and mechanism of action of auxins, gibberellins, cytokinins, ethylene, abscisic acid,

1. Nandy 03.12.16
2. Seema 3.12.16
3. Suvangama 3.12.16
4. 3.12.16
5. Singh 03.12.16
6. Rajesh 3/12/16
7. Pramod
8. Rout 3/12/16

K.G. ARTS & SCIENCE COLLEGE, RAIGARH (C.G.)

M.Sc.(FINAL) BOTANY

SESSION ...2017-18 & 2018-19

SEMESTER III PAPER – I

PLANT DEVELOPMENT

Introduction :

Unique features of plant development, .

Seed germination and seedling growth :

Metabolism of nucleic acids, proteins and mobilization of food reserves; hormonal control of seedling growth;

Shoot development :

Organization of the shoot apical meristem (SAM) Cytological and molecular analysis of SAM, Internal structure of stem, control of tissue differentiation, especially xylem and phloem, secretory ducts laticifers, wood development in relation to environmental factors.

Leaf growth and differentiation :

Determination, phyllotaxy, control of leaf form, differentiation of epidermis (Special reference to stomata and trichomes) and mesophyll.

Root development :

Organization of root apical meristem (RAM)., Root anatomy -vascular tissue differentiation, lateral root hairs, root – microbe interaction.

Latent life-dormancy :

Importance and types of dormancy; seed dormancy; overcoming seed dormancy; bud dormancy.

Senescence and programmed cell death (PCD):

Basic concepts, types of cell death, PCD in the life cycle of plants, metabolic changes associated with senescence and its regulation;influence of hormones and environmental factors on senescence.

1. Nandy 03.12.16
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K.G. ARTS & SCIENCE COLLEGE, RAIGARH (C.G.)

M.Sc.(FINAL) BOTANY

SESSION ..... 2017-18 & 2018-19

SEMESTER III PAPER – II

PLANT REPRODUCTION

Reproduction :

Vegetative options and sexual reproduction; flower development; genetics of floral organ differentiation.

Vegetative reproduction by Budding, Cutting, Grafting, Layering and specialised propagules.

Male gametophyte :

Structure of anthers, microsporogenesis, role of tapetum; pollen development and gene expression; male sterility; sperm dimorphism and hybrid seed production, pollen germination, pollen tube growth and guidance, , pollen storage; pollen allergy; pollen embryos.

Female gametophyte :

Ovule development, megasporogenesis, organization of the embryo sac, structure of the embryo sac cells.

Pollination, pollen – pistil interaction, fertilization :

Floral characteristics, pollination mechanisms and vectors: breeding system; commercial consideration; structure of the pistil ; pollen–stigma interactions, sporophyte and gametophytic self-incompatibility (cytological, biochemical and molecular aspects), double fertilization; in vitro fertilization.

Seed development and fruit growth :

Endosperm development during early, maturation and desiccation stages; embryogenesis ultrastructure and nuclear cytology; cell lineages during late embryo development; storage proteins of endosperm and embryo; polyembryony; apomixes; embryo culture; dynamic of fruit growth; biochemistry and molecular biology of fruit maturation.

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3. Suranjana 3.12.16.
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K.G. ARTS & SCIENCE COLLEGE, RAIGARH (C.G.)

M.Sc.(FINAL) BOTANY

SESSION .. 2017-18 & 2018-19

SEMESTER III PAPER – III

PLANT ECOLOGY

Vegetation Organization :

Autecology, Population ecology, synecology Concept of community & continuum, analysis of Communities (analytical & synthetic characters), community coefficient, interspecific association, ordination, concept of ecological niche.

Vegetation Development :

Temporal changes (Cyclic and non-cyclic); mechanism of Ecological succession (relay floristic and initial floristic composition;facilitation tolerance & inhibition models); changes in the Ecosystem properties during Succession. Ecological adaptation.

Ecosystem Organization:

Structure & function; primary production (methods of measurement, global pattern, controlling factors); energy dynamics (trophic organization, energy flow pathways, ecological efficiencies); litter fall and decomposition (mechanism, substrate quality & climatic factors); global biogeochemical cycles of C,N,P, & S mineral cycles (pathways, process, budget) in terrestrial and aquatic ecosystems.

Air, Water & Soil Pollution :

Kinds, sources, quality parameter; effects on plants and ecosystems.

Ecosystem Management:

Concepts; sustainable development; sustainability indicators.

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3. Suranjana 3.12.16.
4. 3.12.16
5. 03.12.16
6. Rajesh 3/12/16
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K.G. ARTS & SCIENCE COLLEGE, RAIGARH (C.G.)

M.Sc.(FINAL) BOTANY

SESSION ...2017-18 & 2018-19

SEMESTER III PAPER-IV

PLANT RESOURCE UTILIZATION AND CONSERVATION

Resource utilization –

Origin, evolution,botany, cultivation & uses of [1] food, forage & fodder crops [2] fibre crops [3] medicinal and aromatic plants & [4] vegetable, oil yielding crops, important firewood and timber yielding plants, non wood forest products (NWFPs) such as bamboo, rattans, raw materials for paper, making, gums, tannins, dyes, resins and fruits.

Strategies for the conservation –

In – situ conservation :-International efforts & Indian initiatives, protected areas in India – sanctuaries, national parks, biosphere reserves, wetlands, mangroves & coral reefs for conservation of wild biodiversity.

Strategies for the conservation –

Ex-situ conservation :- Principal & practices, Botanical Gardens, field gene banks, seed banks, in-vitro repositories, cryobanks, general account of the activities of Botanical Survey of India, National Bureau of plant Genetic Resources, Indian Council of Agriculture research. Council of Scientific & Industrial Research and the Department of Biotechnology for conservation, non formal conservation efforts.

1. Nandy 03.12.16
2. 3.12.16
3. Surangama 3.12.16
4. 3.12.16
5. Singh 03.12.16
6. Rajesh 3/12/16
7. Pramod
8. Raut 3/12/16

K.G. ARTS & SCIENCE COLLEGE, RAIGARH (C.G.)

M.Sc.(FINAL) BOTANY

SESSION .....~~2016~~ 2017-18 & 2018-19

SEMESTER IV PAPER – I

BIOTECHNOLOGY

Biotechnology :

Basic Concepts, principles and scope.

Plant cell and tissue culture :

General introduction, history, scope, concept of cellular differentiation, totipotency.

Organogenesis and adventive embryogenesis :

Fundamental aspects of morphogenesis, somatic embryogenesis and androgenesis, mechanisms, techniques and utility.

Somatic Hybridization :

Protoplast isolation, fusion and culture, hybrid selection and regeneration, possibilities, achievements and limitations of protoplast research.

Application of plant tissue culture:

Clonal propagation, artificial seed, production of hybrids and somaclones, production of secondary metabolites/ natural products, cryopreservation and germplasm storage.

1. Nandy 03.12.16
2. 3.12.16
3. Suvangama 3.12.16
4. 3.12.16
5. Singh 03.12.16
6. Ranjosh 3/12/16
7. Present
8. 3/12/16

K.G. ARTS & SCIENCE COLLEGE, RAIGARH (C.G.)

M.Sc.(FINAL) BOTANY

SESSION ... 2017-18 & 2018-19

SEMESTER IV PAPER – II

GENETIC ENGINEERING

Recombinant DNA technology :

Gene cloning, principles and techniques, construction of genomic/cDNA libraries, choice of Vectors, DNA synthesis and sequencing, polymerase chain reaction, DNA finger printing.

Genetic engineering of plants :

Aims, strategies for development of transgenic (with suitable examples), Agrobacterium the natural genetic engineer, T-DNA and transposon mediated, gene tagging, chloroplast transformation and its utility, intellectual property rights, possible ecological risks and ethical concerns.

Microbial genetic manipulation:

Bacterial transformation, selection of recombinants and transformants genetic improvements of industrial microbes and nitrogen fixers, fermentation technology.

Genomics and Proteomics :

Genetic and physical mapping of genes, molecular markers for introgression of useful traits, artificial chromosomes, high throughput sequencing, genome projects, Bioinformatics, functional genomic, microarrays,protein profiling and its significance.

1. Nandy 03-12-16
2. [signature] 3.12.16
3. Suranganna 3.12.16
4. [signature] 8.12.16
5. [signature] 03.12.16
6. Rajesh 3/12/16
7. [signature]
8. [signature] 3/12/16

K.G. ARTS & SCIENCE COLLEGE, RAIGARH (C.G.)

M.Sc.(FINAL) BOTANY

SESSION .. ..2017-18 & 2018-19

SEMESTER IV PAPER - III

PLANT PATHOLOGY

HISTORY OF PLANT PATHOLOGY :

General characteristics of fungi, bacteria and viruses, their heterotraction behaviour with emphasis on parasitism, parasitic ability and virulence.

Symptomatology :

General symptoms of plant diseases, pathogenic or nonpathogenic.

Pathogenicity:

Distribution of plant pathogens, mode of infection, inoculum and inoculum potential, Koch's postulates.

Host parasite relation :

Mechanism of infection, role of enzymes & toxins in pathogensis.

Defence of plant against pathogens, resistance and succeptibility by parasensitive reaction phytoalexis, Disease syndrome.

1. Nandy 03.12.16
2. [illegible] 3/12/16
3. Suranganna 3.12.16.
4. [illegible] 3.12.16
5. Singh 03.12.16
6. Rajesh 3/12/16
7. Parmar
8. [illegible] 3/12/16

K.G. ARTS & SCIENCE COLLEGE, RAIGARH (C.G.)

M.Sc.(FINAL) BOTANY

SESSION .....2017-18 & 2018-19

SEMESTER IV PAPER – IV

PLANT DISEASE AND CONTROL

Effect of environment :

Predeposition & stress ,epidemiology and disease forecasting. Source of infection i.e. seed, soil, water and air borne diseases of plants, significance of phyllosphere and rhizosphere studies. Recurrence of disease.

Details of plant disease :

Crop loss estimates & recommended control for the important diseases caused by fungi, bacteria, viruses, mycoplasma and nematodes, in the following crop plants :

(a) Wheat, Rice, Bajra, Maize, Sugarcane.

(b) Arhar, Gram, Pea.

(c) Groundnut, Til, Linseed, Cotton.

(d) Chillies, Tomato, potato, Brinjal, Coriander, Tobacco.

(e) Citrus fruits e.g. Lemon, Orange, Musami; Papaya, Apple, Banana

Control of plant disease :

Principles of plant disease control, methods of control e.g. regulator, chemical, biological and breeding of resistant varieties of host plants, plant quarantine.

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1. Nandy 03.12.16
2. 3.12.16
3. Suranggwal 3.12.16
4. 3.12.16
5. Singh 03.12.16
6. Rajesh 3/12/16
7. 3/12/16
8. 3/12/16

K.G. ARTS & SCIENCE COLLEGE, RAIGARH (C.G.)

M.Sc.(PREVIOUS) BOTANY

SESSION ...2018-19, 2019-20, 2020-21

SEMESTER II PAPER – I Code 1505

GYMNOSPERMS

GYMNOSPERMS:

Inroduction : gymnosperms,the vessel-less and fruitless seed plants varying in the structure of their sperms,pollen grains,pollen germination and the complexity of their female gametophyte; evolution of gymnosperms.

Classifications of Gymnosperms

Distribution of Gymnosperm in India: General account

Brief account of the families of pteridospermales (Lyginopteridaceae,Medullosaceae, Caytoniaceae and Glossopteridaceae).

General Account of Cycadeoidales and Cordaitales

Struture and reproducation in Cycadales, Ginkgoales, Ephedrales, Coniferales, Welwitschiales and Gnetales.

Economic importance of gymnosperms: General account

Practical :- According to theory

Mayank Sushma Suvangama Yogendra

K.G. ARTS & SCIENCE COLLEGE, RAIGARH (C.G.)

M.Sc.(PREVIOUS) BOTANY

SESSION ..2018-19,..2019-20, 2020-21

SEMESTER II PAPER – II Code 1506

TAXONOMY OF ANGIOSPERMS

Taxonomy of Angiosperms : Introduction, terminology for plant description.

The species concept:

Taxonomy hierarchy, species, genus ,family and other categories; principles used in assessing relationship,delimitation of taxa and attribution of rank.

Salient features of the International Code of Botanical Nomenclature.

Taxonomic evidence:

Morphology, anatomy, palynology,embryology, cytology; phytochemistry; genome analysis and nucleic acid hybridization.

Taxonomic tools:

Herbarium; floras; histological, cytological, phytochemical,serological, biochemical and molecular techniques, computer and GIS.

System of angiosperm classification:

Bentham and Hooker, Engler and Prantl, Hutchinson, Cronquist, Takhatajan.

Plant Families:

Ranunculaceae,Nymphaeaceae,Papaveraceae,Cruciferae,Malvaceae,Rutaceae,Leguminosae, Rosaceae,Myrtaceae,Cucurbitaceae,Umbelliferae,Rubiaceae,Compositae,Apocynaceae, Asclepiadaceae,Convolvulaceae,Solanaceae,Acanthaceae,Verbenaceae,Labiatae., Euphorbiaceae, Liliaceae, Gramineae

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Practical:- According to theory

Mayank Sushma Suvangama Lokendra

Ruper

K.G. ARTS & SCIENCE COLLEGE, RAIGARH (C.G.)

M.Sc.(PREVIOUS) BOTANY

SESSION 2018-19, 2019-20, 2020-21

SEMESTER II PAPER – III Code 1507

PLANT PHYSIOLOGY

Plant Growth and Plant Movement:

General account of plant growth,factors affecting growth.
General account of plant movement Tactic,Tropic,Nastic

Fundamentals of enzymology:

General aspects, allosteric mechanism, regulatory and active sites,isozymes, kinetics of enzymatic catalysis, Michaelis-Menten equation and its significance.

Membrane transport and translocation of water and solutes :

Plant-water relation, water absorption, ascent of sap, transpiration, mineral absorption, nutrient uptake, comparison of xylem and phloem transport, phloem loading and unloading, passive and active solute transport, membrane transport proteins.

The flowering process :

Photoperiodism and its significance, endogenous clock and its regulation, floral induction and development – genetic and molecular analysis, Vernalization and its significance.

Stress physiology:

Plant responses to biotic and abiotic stress, mechanisms of biotic and abiotic stress tolerance, HR and SAR, water deficit and drought resistance, salinity stress, metal toxicity, freezing and heat stress, oxidative stress.

Practical :- According to theory

Mayanj Sushma Surangma

Rajendra

K.G. ARTS & SCIENCE COLLEGE, RAIGARH (C.G.)

M.Sc.(PREVIOUS) BOTANY

SESSION 2018-19, 2019-20, 2020-21

SEMESTER II PAPER – IV Code 1508

PLANT METABOLISM

Photochemistry and Photosynthesis:

General concepts and historical background, evolution of photosynthetic apparatus, photosynthetic pigments and light harvesting complexes, photooxidation of water, mechanisms of electron and proton transport, carbon assimilation – the Calvin cycle, photorespiration and its significance, the C4 cycle, the CAM pathway,

Respiration and lipid metabolism :

Overview of plant respiration, glycolysis, the TCA cycle, electron transport and ATP synthesis, pentose phosphate pathway, glyoxylate cycle,alternative oxidase system, structure and function of lipids, fatty acid biosynthesis ,synthesis of membrane lipids, structural lipids and storage lipids and their catabolism.

Nitrogen fixation, nitrogen and sulphur metabolism :

Overview, biological nitrogen fixation, nodule formation and nod factors, mechanism of nitrate uptake and reduction, ammonium assimilation, sulphate uptake, transport and assimilation.

Sensory photobiology

History of discovery of phytochromes and cryptochromes and their photochemical and biochemical properties,

Plant growth regulators and elicitors :

Physiological effects and mechanism of action of auxins, gibberellins, cytokinins, ethylene, abscisic acid,

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Practical :- According to theory

Expert

Mayank Sushma Suranjana Logendra

K.G. ARTS & SCIENCE COLLEGE. RAIGARH (C.G.)

M.Sc.(FINAL) BOTANY

Course code 1509

SESSION ..2017-18 & 2018-19

SEMESTER III PAPER – I

PLANT DEVELOPMENT

Introduction :

Unique features of plant development,

Seed germination and seedling growth :

Metabolism of nucleic acids, proteins and mobilization of food reserves; hormonal control of seedling growth;

Shoot development :

Organization of the shoot apical meristem (SAM) Cytological and molecular analysis of SAM, Internal structure of stem, control of tissue differentiation, especially xylem and phloem, secretory ducts laticifers, wood development in relation to environmental factors.

Leaf growth and differentiation :

Determination, phyllotaxy, control of leaf form, differentiation of epidermis (Special reference to stomata and trichomes) and mesophyll.

Root development :

Organization of root apical meristem (RAM)., Root anatomy -vascular tissue differentiation, lateral root hairs, root – microbe interaction.

Latent life-dormancy :

Importance and types of dormancy; seed dormancy; overcoming seed dormancy; bud dormancy.

Senescence and programmed cell death (PCD):

Basic concepts, types of cell death, PCD in the life cycle of plants, metabolic changes associated with senescence and its regulation;influence of hormones and environmental factors on senescence.

1. Nandy 03-12-16
2. 3/12/16
3. Suranjana 3/12/16
4. 3/12/16
5. 03.12.16
6. 3/12/16
7. Pramod
8. 3/12/16

K.G. ARTS & SCIENCE COLLEGE, RAIGARH (C.G.)

M.Sc.(FINAL) BOTANY

SESSION ..... 2017-18 & 2018-19 Course code 1510

SEMESTER III PAPER – II

PLANT REPRODUCTION

Reproduction :

Vegetative options and sexual reproduction; flower development; genetics of floral organ differentiation.

Vegetative reproduction by Budding, Cutting, Grafting, Layering and specialised propagules.

Male gametophyte :

Structure of anthers, microsporogenesis, role of tapetum; pollen development and gene expression; male sterility; sperm dimorphism and hybrid seed production, pollen germination, pollen tube growth and guidance, [illegible], pollen storage, pollen allergy, pollen embryos.

Female gametophyte :

Ovule development, megasporogenesis, organization of the embryo sac, structure of the embryo sac cells.

Pollination, pollen – pistil interaction, fertilization :

Floral characteristics, pollination mechanisms and vectors: breeding system; commercial consideration; structure of the pistil ; pollen–stigma interactions, sporophyte and gametophytic self-incompatibility (cytological, biochemical and molecular aspects), double fertilization; in vitro fertilization.

Seed development and fruit growth :

Endosperm development during early, maturation and desiccation stages; embryogenesis ultrastructure and nuclear cytology; cell lineages during late embryo development; storage proteins of endosperm and embryo; polyembryony; apomixes; embryo culture; dynamic of fruit growth; biochemistry and molecular biology of fruit maturation.

1. Nandy 03.12.16
2. [illegible] 3/12/16
3. Suranjana 3.12.16.
4. [illegible] 3.12.16
5. [illegible] 03.12.16
6. Rajesh 3/12/16
7. [illegible]
8. [illegible] 3/12/16

K.G. ARTS & SCIENCE COLLEGE, RAIGARH (C.G.)

M.Sc.(FINAL) BOTANY

SESSION .. 2017-18 & 2018-19

Course code
JSJ1

SEMESTER III PAPER – III

PLANT ECOLOGY

Vegetation Organization :

Autecology, Population ecology, synecology Concept of community & continuum, analysis of Communities (analytical & synthetic characters), community coefficient, interspecific association, ordination, concept of ecological niche.

Vegetation Development :

Temporal changes (Cyclic and non-cyclic); mechanism of Ecological succession (relay floristic and initial floristic composition;facilitation tolerance & inhibition models); changes in the Ecosystem properties during Succession. Ecological adaptation.

Ecosystem Organization:

Structure & function; primary production (methods of measurement, global pattern, controlling factors); energy dynamics (trophic organization, energy flow pathways, ecological efficiencies); litter fall and decomposition (mechanism, substrate quality & climatic factors); global biogeochemical cycles of C,N,P, & S mineral cycles (pathways, process, budget) in terrestrial and aquatic ecosystems.

Air, Water & Soil Pollution :

Kinds, sources, quality parameter; effects on plants and ecosystems.

Ecosystem Management:

Concepts; sustainable development; sustainability indicators.

1. Nandini 03.12.16
2. [illegible] 3/12/16
3. Suranjana 3.12.16
4. [illegible] 3.12.16
5. [illegible] 03.12.16
6. Rajesh 3/12/16
7. [illegible]
8. [illegible] 3/12/16

K.G. ARTS & SCIENCE COLLEGE, RAIGARH (C.G.)

M.Sc.(FINAL) BOTANY

SESSION ...2017-18 & 2018-19. Course code 1512

SEMESTER III PAPER - IV

PLANT RESOURCE UTILIZATION AND CONSERVATION

Resource utilization –

Origin, evolution,botany, cultivation & uses of [1] food, forage & fodder crops [2] fibre crops [3] medicinal and aromatic plants & [4] vegetable, oil yielding crops, important firewood and timber yielding plants, non wood forest products (NWFPs) such as bamboo, rattans, raw materials for paper, making, gums, tannins, dyes, resins and fruits.

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In – situ conservation :-International efforts & Indian initiatives, protected areas in India – sanctuaries, national parks, biosphere reserves, wetlands, mangroves & coral reefs for conservation of wild biodiversity.

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1. Nandy 03.12.16
2. 3.12.16
3. Suranjana 3.12.16
4. 3.12.16
5. 03.12.16
6. 3/12/16
7.
8. 3/12/16

K.G. ARTS & SCIENCE COLLEGE, RAIGARH (C.G.)

M.Sc.(FINAL) BOTANY

SESSION .....2017-18 & 2018-19 Course code 1513

SEMESTER IV PAPER – I

BIOTECHNOLOGY

Biotechnology :

Basic Concepts, principles and scope.

Plant cell and tissue culture :

General introduction, history, scope, concept of cellular differentiation, totipotency.

Organogenesis and adventive embryogenesis :

Fundamental aspects of morphogenesis, somatic embryogenesis and androgenesis, mechanisms, techniques and utility.

Somatic Hybridization :

Protoplast isolation, fusion and culture, hybrid selection and regeneration, possibilities, achievements and limitations of protoplast research.

Application of plant tissue culture:

Clonal propagation, artificial seed, production of hybrids and somaclones, production of secondary metabolites/ natural products, cryopreservation and germplasm storage.

1. Nandy 03.12.16
2. 3.12.16
3. Suvangana 3.12.16
4. 3.12.16
5. Singh 03.12.16
6. Rajesh 3/12/16
7. Present
8. 3/12/16

K.G. ARTS & SCIENCE COLLEGE, RAIGARH (C.G.)

M.Sc.(FINAL) BOTANY

SESSION ... 2017-18 & 2018-19

Course code

SEMESTER IV PAPER - II — 1514

GENETIC ENGINEERING

Recombinant DNA technology :

Gene cloning, principles and techniques, construction of genomic/cDNA libraries, choice of Vectors, DNA synthesis and sequencing, polymerase chain reaction, DNA finger printing.

Genetic engineering of plants :

Aims, strategies for development of transgenic (with suitable examples), Agrobacterium the natural genetic engineer, T-DNA and transposon mediated, gene tagging, chloroplast transformation and its utility, intellectual property rights, possible ecological risks and ethical concerns.

Microbial genetic manipulation:

Bacterial transformation, selection of recombinants and transformants genetic improvements of industrial microbes and nitrogen fixers, fermentation technology.

Genomics and Proteomics :

Genetic and physical mapping of genes, molecular markers for introgression of useful traits, artificial chromosomes, high throughput sequencing, genome projects, Bioinformatics, functional genomic, microarrays,protein profiling and its significance.

1. Nandy 03-12-16
2. 3/12/16
3. Surangana 3.12.16
4. 3.12.16
5. 03.12.16
6. Rajesh 3/12/16
7. Laxmi
8. 3/12/16

K.G. ARTS & SCIENCE COLLEGE, RAIGARH (C.G.)

M.Sc.(FINAL) BOTANY

SESSION .. 2017-18 & 2018-19 Course code JS15

SEMESTER IV PAPER - III

PLANT PATHOLOGY

HISTORY OF PLANT PATHOLOGY :

General characteristics of fungi, bacteria and viruses, their heterotraction behaviour with emphasis on parasitism, parasitic ability and virulence.

Symptomatology :

General symptoms of plant diseases, pathogenic or nonpathogenic.

Pathogenicity:

Distribution of plant pathogens, mode of infection, inoculum and inoculum potential, Koch's postulates.

Host parasite relation :

Mechanism of infection, role of enzymes & toxins in pathogensis.

Defence of plant against pathogens, resistance and succeptibility by parasensitive reaction phytoalexis, Disease syndrome.

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1. Nandy 03.12.16
2. [illegible] 3/12/16
3. Suranganna 3.12.16.
4. [illegible] 3.12.16
5. Singh 03.12.16
6. Rajesh 3/12/16
7. Parmar
8. Rauth 3/12/16

P.G. ARTS & SCIENCE COLLEGE, RAIGARH (C.G.)

M.Sc.(FINAL) BOTANY

SESSION .....2017-18 & 2018-19

Course code
1516

SEMESTER IV PAPER – IV

PLANT DISEASE AND CONTROL

Effect of environment :

Predeposition & stress ,epidemiology and disease forecasting. Source of infection i.e. seed, soil, water and air borne diseases of plants, significance of phyllosphere and rhizosphere studies. Recurrence of disease.

Details of plant disease :

Crop loss estimates & recommended control for the important diseases caused by fungi, bacteria, viruses, mycoplasma and nematodes, in the following crop plants :

(a) Wheat, Rice, Bajra, Maize, Sugarcane.

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Control of plant disease :

Principles of plant disease control, methods of control e.g. regulator, chemical, biological and breeding of resistant varieties of host plants, plant quarantine.

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1. Nandy 03.12.16
2. 3/12/16
3. Suranjana 3.12.16
4. 2.12.16
5. 03.12.16
6. Rajesh 3/12/16
7. Laxmi
8. 3/12/16

Cooke 1520

M.Sc Botany Sem II Lab-2

Practicals— study of

1 Plant growth
2. Plant movement
3. Effect of substrate conc.
4. Effect of enzyme conc.
5. water absorption, mineral absorption
6. Osmosis
7. plasmolysis
8. Diffusion
9. DPD
10. Transpiration
11. stress

Books
Physiology — Rao
Physiology — Malik
Physiology - Pandey Sinha
Physiology — V Verma.
Physiology — Jain
Physiology - Ross, Salisbury
Physiology - Taiz, Zeiger
Physiology — Bidwell

Plant metabolism — Dennis
Biochemistry — Moore
Physiology — Noble
Physiology — Amar singh

Code 1520

M.Sc Botany Sem II Lab-2

Practicals – study of

1 Photosynthesis, effect of CO_2 conc, light wavelength, diff. condition.
2. Respiration, and R.Q. of diff substrate
3. Chromatography of chlorophyll & separations
4. Pigments, study
5. Root nodules study
6. Effect of plant hormones study

Books

Physiology – Meyer
Physiology – Malik
Physiology – Pandey, Sinha
Physiology – Verma
Physiology – Jain
Physiology – Ross Salisbury
Physiology – Taiz
Physiology – Rao
Physiology – Bidwell
Plant Metabolism – Dennis
Biochemistry – Moore
Physiology – Noble
Plant Physiology – Hopkins

Cooke 1520

M.Sc Botany Sem II Lab-2

Practicals— study of

1 Plant growth
2. Plant movement
3. Effect of substrate conc.
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Physiology - Taiz, Zeiger
Physiology — Bidwell

Plant metabolism — Dennis
Biochemistry — Moore
Physiology — Noble
Physiology — Amar singh

Code 1520

M.Sc Botany Sem II Lab-2

Practicals – study of

1 Photosynthesis, effect of CO_2 conc, light wavelength, diff. condition.
2. Respiration, and R.Q. of diff substrate
3. Chromatography of chlorophyll & separations
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Physiology – Pandey, Sinha
Physiology – Verma
Physiology – Jain
Physiology – Ross Salisbury
Physiology – Taiz
Physiology – Rao
Physiology – Bidwell
Plant Metabolism – Dennis
Biochemistry – Moore
Physiology – Noble
Plant Physiology – Hopkins

Code -1522

M.Sc Botany Sem III Lab-2

Practicals - study of:

1. Minimum size and minimum number of Quadrat
2. Frequency By Quadrate Belt, line
3. Density By Quadrate Belt, line
4. Abundance By Quadrat Belt, line
5. Basal area & cover
6. IVI, By Quadrate, Belt line
7. Ecological adaptation
8. Pollution
9. Point center quarter method.
10. Biomass study

Books

Ecology - P.D. Sharma
Ecology - Ambashta
Ecology - Verma.
Ecology - Odum
Ecology - Subrahmaniyam
Ecology - Kormondy
Ecology - R. Misra
Ecology - K.C. Mishra
Work Book of Ecology - R. Misra
Ecology - Kaushik
Ecology - Kumar HD
Ecology - Shukla Chandel
Ecology & Environment - P.D Sharma
Ecology - Begon
Ecology - Chapman & Rais
Understanding Env. Pollution - Hill

Code 1522

M.Sc Botany Sem III Lab-2

Praticals - study of

(1) Food plants
(2) fibre plants
(3) Medicinal & aromatic plants
(4) Vegetable plants
(5) Oil yielding plants
(6) fire wood & Timbre yielding plants
(7) Major & Minor products of forests
(8) Plant preservation
(9) Plant conservation study

Books

Economic Botany. Pandey
Economic Botany - Singh Pandey Jain
Economic Botany - Verma.
Economic Botany - Hill pub
National Gene Bank - Anonymous
Plant & Civilization - Baker
Conservation of plant diversity - Frankel
Global Biodiversity Assessment - Heywood
Economic Botany - Kocher
Plant genetic resources - Parodo
Plants & Society - Swaminathan
Plant & man - Scheri
World food prospects - Pinstrup

M.Sc Botany Sem II Lab - I Code 1519

Practicals - Study of

① Gymnosperms available

② Slide preparation of Gymnosperms material

③ specimens

④ fossils study

Books -

Gymnosperm — Chamberlain

Gymnosperm — Kochar

Gymnosperm — Vasishta

College Botany - Gangulikar

Gymnosperm — Chopra

Gymnosperm — Biswas

Gymnosperm — Sporn

Gymnosperm — Singh

Gymnosperm - Bhatnagar

Gymnosperm - Sporne

Gymnosperm — Singh

code 1519

M.Sc Botany Sem II Lab-I

Practicals- study of

① Plant families local available plants
② Plant description
③ Floral parts study
④ Placentation
⑤ Inflorescence

Books

Angiosperm — Sharma & Sharma
Angiosperm .B P. Pandey
Angiosperm — Tyagi & Khetrapal
Angiosperm — Jain.
Angiosperm — A K Mandal
Systematic Botany — Mathur
Systematic Botany — Gupta
Taxonomy of Angiosperm — Lawrence
Plant Taxonomy — Saxena
Angiosperm — Davis
Numerical taxonomy - Cole
Plant Taxonomy — Heslop
Plant Taxonomy — Stace
Plant Systematics - Woodland