

GOUR MOHAN SACHIN MANDAL MAHAVIDYALAYA

SUBJECT: BOTANY

YEAR: 1ST YEAR

SESSION: 2015-2016

TEACHER NAME: TARAKNATH HALDER

UNIT NAME(TOPIC)	PAPER (M= Module)	SUBUNIT	NO. OF CLASSES
Algae	I (M-I)	Diagnostic characters and examples of Cyanophyceae, Rhodophyceae, Chlorophyceae, Charophyceae and Phaeophyceae (Lee 1999).	2
		Life histories of Chara and Ectocarpus, Economic importance	1
Fungi	I (M-I)	Diagnostic characters and examples of Oomycotina, Mastigomycotina, Zygomycotina, Ascomycotina Basidiomycotina, Deuteromycotina (Ainsworth, 1973)	1
		Life histories of Rhizopus and Ascobolus: Economic importance of fungi	1
		Fungal symbioses: Mycorrhiza, Lichen and their importance.	1
Bryophytes	I (M-I)	Amphibian nature, Diagnostic characters and examples of Hepaticopsida	1
		Diagnostic characters and examples of Anthocerotopsida and Bryopsida (Proskauer 1957),	1
		Life histories of Marchantia and Funaria., Ecological importance.	2
Pteridophytes	I (M-II)	Diagnostic characters and examples of Psilophyta, Lycophyta, Sphenophyta & Filicophyta (Gifford & Foster 1989),	2
		Life histories of Selaginella and Dryopteris. Economic importance.	2
5. Gymnosperms	I (M-II)	Diagnostic characters and examples of Cycadophyta, Coniferophyta and Gnetophyta (Gifford & Foster 1989)	1

		Life histories of Cycas and Pinus., Economic importance of Gymnosperms	1
Paleobotany and Palynology	I (M-II)	Importance of fossil study, Modes of Preservation.	1
		Geological time scale. Williamsonia (Reconstructed)	1
		Palynology - Definition, spore & pollen (brief idea), Applications	1

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SUBJECT: BOTANY

YEAR: 2ND YEAR

SESSION: 2015-2016

TEACHER NAME: TARAKNATH HALDER

UNIT NAME (TOPIC)	PAPER (M= Module)	SUBUNIT	NO. OF CLASSES
Anatomy	II (M- III)	Stomata - Types (Metcalfe & Chalk), Mechanical Tissues - Principle and distribution,	1.
		Stelar types and evolution, Shoot apex (Tunica-Corpus) and Root apex 26 (Korper-Kappe),	2
		Secondary growth – normal in dicot stem and anomaly in stem of Tecoma & Dracaena.	1
Cell Biology and Genetics	II (M- III)	Ultrastructure of nuclear envelope, nucleolus and their functions, 2.2 Molecular organisation of metaphase chromosome (Nucleosome concept)	2
		Chromosomal aberrations deletion, duplication, inversion & translocation, 2.4 Aneuploidy & Polyploidy-types, importance and role in evolution	1
		Central Dogma, DNA replication - mechanism in prokaryote, Transcription,	3

		Processing of mRNA and Translation	
		Genetic Code properties, Epistasis, 2.10 Linkage group and Genetic map (three-point test cross) Genetic Code properties, Epistasis, Linkage group and Genetic map (three-point test cross)	1
		Mutation - Point mutation (tautomerisation; transition, transversion and frame shift), Mutagen physical and chemical, Brief concept of Split gene, Transposons.	1
Ecology	II (M-IV)	Ecotypes and microclimate, Plant succession - stages of succession (hydrosere)	1
		Ecological adaptation of hydrophytes, halophytes and xerophytes	2
		Biodiversity - Definition, levels of biodiversity (genetic, species and ecosystem), methods of in-situ & ex-situ conservation, Phytoremediation	2
		PRACTICAL	2
Cryptogams	III (M-V)	Work out, microscopic preparation, drawing and labeling, description and identification of the following cryptogams: <i>Chara</i> , <i>Ectocarpus</i> , <i>Rhizopus</i> , <i>Ascobolus</i>	2
Angiosperms	III (M-V)	Dissection, drawing and labeling, description of angiospermic plants and floral parts, floral formula and floral diagram, identification (family) from the following families: Leguminosae (Fabaceae), Malvaceae, Solanaceae, Labiales (Lamiaceae), Acanthaceae.	6
Anatomy	III (M-VI)	Stem: Cucurbita, Maize Root: Gram, Orchid. Leaf: Nerium, Tuberose.	2

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SUBJECT: BOTANY

YEAR: 3rd YEAR

SESSION:2015-2016

TEACHER NAME: TARAKNATH HALDER

UNIT NAME(TOPIC)	PAPER (M= Module)	SUBUNIT	NO. OF CLASSES
Biofertilizer	IV A (M-VII)	Sources, Production and Application of Biofertilizer	1.
Mushroom cultivation	IV A (M-VII)	Food value and Cultivation technique of <i>Pleurotus</i> .	1
Plant disease Controll	IV A (M-VII)	Quarantine, Biological control and Chemical Control	1
Plant breeding	IV A (M-VII)	Mass and Pure line selection, Heterosis and hybrid seed production	2
Plant tissue culture	IV A (M-VII)	Callus culture and plant regeneration and Micropropagation	1
		Somatic embryogenesis and Artificial seed	1
		, Protoplast culture and applications	1
Recombinant DNA	IV A (M-VII)	Recombinant DNA, restriction enzymes,	1
		Plasmids as vector, Gene cloning (basic steps), Transgenic plants.	1
	PRACTICAL		
	IV B (M-VIII)	Laboratory Instruments	1
	IV B (M-VIII)	Sterilization technique	1
	IV B (M-VIII)	PDA media	1

	IV B (M-VIII)	Bacterial staining	1
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GOUR MOHAN SACHIN MANDAL MAHAVIDYALAYA

SUBJECT: BOTANY

YEAR: 1st YEAR

SESSION: 2015-2016

TEACHER NAME: SUBHANKAR BERA

UNIT NAME / TOPIC	PAPER (M= Module)	SUBUNIT	NO. OF CLASSES
Domains of life	I (M- I)	Archaea, Bacteria and Eukarya.	1
Microbiology	I (M- I)	Plant virus - general characteristics, Transmission and Translocation of plant virus,	1
		Lytic cycle (T4 phase) and Lysogenic cycle (Lambda phage)	1
		Chemical nature of cell wall of Gram positive and Gram negative bacteria	1
		Genetic recombination in bacteria (Conjugation, Transformation, Transduction), 2.6 Industrial uses of bacteria	2
Plant Pathology	I (M- I)	Symptoms - necrotic, hypoplastic and hyperplastic, Koch's postulates	1
		Biotrophs and Necrotrophs, Disease triangle, Pathotoxins and phytoalexins (brief concept)	1
		Symptoms, causal organism, disease cycle and control measures of plant diseases (Late blight of potato, Black steam rust of wheat)	2
Angiosperm Morphology & Embryology	I (M- II)	Inflorescence types with examples, Corolla forms, Aestivation, Placentation types.	1
		Sporogenesis & Gametogenesis, Embryo development in Capsella, Endosperm development	1
Taxonomy of Angiosperms	I (M II)	Artificial, Natural and Phylogenetic systems of classificaiton, Principles of ICBN.	2

		Bentham and Hooker's system of classification, Phenetics- Brief concept	1
		Diagnostic features of following families- Malvaceae, Leguminosae (Fabaceae), Cucurbitaceae, Solanaceae, Labiatae (Lamiaceae), Acanthaceae, Rubiaceae, Compositae (Asteraceae), Gramineae (Poaceae), Orchidaceae.	6

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SUBJECT: BOTANY

YEAR: 2nd YEAR

SESSION: 2015-2016

TEACHER NAME: SUBHANKAR BERA

UNIT NAME (TOPIC)	PAPER (M= Module)	SUBUNIT	NO. OF CLASSES
Biochemistry and Plant Physiology	II (M IV)	Proteins - Primary, secondary and tertiary structure	1
		Nucleic acid- DNA structure, RNA types	1
		Enzyme- Classifications with examples (IUBMB), Mechanism of action.	1
		Transport in plants - ascent of sap and Xylem cavitation , Phloem transport and source-sink relation, Transpiration-Mechanism of stomatal movement, significance	2
		PhotosynthesisPigments, Action spectra and Enhancement effect, Electron transport system and Photophosphorylation, C3 and C4 photosynthesis, CAM- Reaction and Significance	3
		Respiration- Glycolysis & Krebs cycle— Reactions and Significance, ETS and oxidative phosphorylation	2
		Nitrogen metabolism –Biological dinitrogen fixation, Amino acid synthesis (reductive amination and transamination)	1

		Plant Growth regulators – Physiological roles of Auxin, Gibberellin, Cytokinin, Ethylene, ABA.	2
		Photoperiodism (Plant types, Role of phytochrome and GA in flowering) and Vernalization and Senescence	1
Economic Botany	II (M IV)	Study of the following economically important plants (scientific names, families, parts used and importance), Cereals-rice, wheat, Pulses- mung, gram, 4.3 Spices - ginger, cumin, Beverages - tea, coffee, Medicinal Plants - cinchona, neem, ipecac, vasaka, Oil yielding plants- mustard, groundnut, coconut, Vegetables- potato, radish, bottlegourd, cabbage, Fibre yielding plants-cotton, jute, Timber yielding plants- teak, sal, Fruits- mango, apple, Sugar yielding plant- sugarcane.	2
	PRACTICAL		
Identification with reasons	III (M-V)	Cryptogamic specimens (macroscopic/microscopic) as prescribed in the theoretical syllabus. Gymnosperms: Macroscopic - male and female strobilus of Cycas, and Pinus	1
		Anatomical slides (stelar types, transfusion tissue, sieve tube, sunken stomata, lenticel). Morphology: Inflorescence types.	2
Spot identification	III (M-V)	Identification of Angiospermic plants- Scientific name and family	1
Plant Physiology	III (M-VI)	i) Experiment on Plasmolysis. ii) ii) Measurement of leaf area (graphical method) and determination of transpiration rate per unit area by weighing method. iii) iii) Imbibition of water by dry seeds - proteinaceous and fatty seeds.	3

		iv) Evolution of O ₂ during photosynthesis (using graduated tube). v) Evolution of CO ₂ during aerobic respiration and measurement of volume.	2
Cell Biology	III (M-VI)	i) Staining (Aceto-orcein) and squash preparation of onion root tip: study of mitotic stages. ii) Determination of mitotic index (from onion root tip)	2
Identificaiton with reasons	III (M-VI)	Cytological slides of different mitotic and meiotic stages.	1

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SUBJECT: BOTANY

YEAR: 3rd YEAR

SESSION: 2015-2016

TEACHER NAME: SUBHANKAR BERA

UNIT NAME/ TOPIC	PAPER (M= Module)	SUBUNIT	NO. OF CLASSES
Biometry	IV A (M- VII)	Measures of Central Tendency (Mean, Mode and Median), Goodness of fit (Chi- square test)	1
Pharmacognosy	IV A (M- VII)	Scope and importance, Secondary metabolites- alkaloids, terpenoids, phenolics and their functions, Organoleptic evaluation of crude drugs.	2
	PRACTICAL		
	IV A (M- VIII)	Medicinal plants and their useful parts	1
	IV A (M- VIII)	Determination of Goodness of fit of normal monohybrid ratios (3: I and I: 1) by Chi-square analysis.	3