

LESSON PLAN (July-November, 2018)

Name of the Assistant Professor:- Dr. Vivek Kumar Singh

Class and Section:- B.Sc. Botany (Hons.) V Semester

JULY, 2018
WEEK-3
Paper 1 (PS & E)
What is systematics; Identification, Classification and Nomenclature of plants
Field inventory, Herbarium preparation and management
WEEK-4
Paper 2 (PP)
Pathway of water movement; concepts of symplast and apoplast; ascent of sap
Paper 4 (GG-I)
Mendel's work on transmission of traits, Genetic Variation, Molecular basis of Genetic Information
Interrelation between the cell structure and the genetics, Mitosis, Meiosis (explaining Mendel's ratios)
Practicals, Assignment, Seminars, Group Discussion & Test
AUGUST, 2018
WEEK-1
Paper 1 (PS & E)
Important herbaria and botanical gardens of the world and India, Documentation: Flora, Monographs, Journals, Online Journals and Keys; Evidences from morphology, palynology, cytotaxonomy, chemotaxonomy, serology, and molecular systematics
WEEK-2
Paper 1 (PS & E)
Taxonomic hierarchy: Concept of taxa; categories and hierarchy; species concept (taxonomic, biological, evolutionary), Principles and rules of nomenclature; ranks and names; type method, author citation, valid publication; rejection of names, principle of priority and its limitation; names of hybrids and cultivars
WEEK-3
Paper 2 (PP)
Transpiration; energy exchange during transpiration; role of stomata; relationship with photosynthesis; antitranspirants; guttation; exchange of gases
Characterization of stress response to water and high and low temperature response to saline soils; mechanism of response, essential and non-essential elements; criteria for essentiality; macro and micronutrients; roles of essential elements; mineral deficiency symptoms; ion antagonism and toxicity
WEEK-4
Paper 4 (GG-I)
Principles of Inheritance, Chromosome theory of inheritance, Laws of Probability, Pedigree analysis
Incomplete and codominance, Multiple alleles, Lethal alleles, Epistasis, Pleiotropy, Environmental effects on phenotypic expression, sex linked inheritance
Linkage and crossing over, Cytological basis of crossing over, Molecular mechanism of crossing over
Practicals, Assignment, Seminars, Group Discussion & Test

Vivek Singh

SEPTEMBER, 2018
WEEK-1
Paper 1 (PS & E)
Systems of classification: Classification by Bentham and Hooker, Engler and Prantl & Takhtajan Brief reference of Angiosperm Phylogeny Group (APG) Classification
WEEK-2
Paper 2 (PP)
Transport of ions across cell membranes, passive absorption, electrochemical gradient, Donnan's equilibrium, facilitated diffusion, accumulation against concentration gradient, active absorption, role of ATP, carrier systems, role of cell membrane, proton pump and ion flux, Structurefunction relationship for the Translocation of photoassimilates from source to sink cells
WEEK-3
Paper 2 (PP)
Flowering; physiological definition; role of light; photoperiodism – discovery; variation in response; long day; short day and day neutral plants; inductive and non- inductive cycles; role of dark period; role of quality and intensity of light; vernalization; mechanism; bolting in long day plants
WEEK-4
Paper 4 (GG-I)
Recombination frequency as a measure of linkage intensity, two factor and three factor crosses, Interference and coincidence, Somatic cell genetics – an alternative approach to gene mapping Chromosomal Mutations: Deletion, Duplication, Inversion, Translocation, Aneuploidy and Polyploidy
Practicals, Assignment, Seminars, Group Discussion & Test

OCTOBER, 2018
WEEK-1
Paper 1 (PS & E)
Role of Computers in systematics; Characters and attributes; OTUs, character weighing and coding; cluster analysis, phenograms, cladistics Terms and concepts (homology, analogy, parallelism, convergence, monophyly, polyphyly, clades), origin & evolution of angiosperms; co-evolution of angiosperms and animals; methods of illustrating evolutionary relationship (phylogenetic tree, cladogram)
WEEK-2
Paper 2 (PP)
Role of growth regulators; nutrient status; nature of the flowering stimulus; diffusibility of photoperiodic and vernalization stimuli; florigen concept Structure, biosynthesis, analysis, transport, physiological effects and mechanism of action of growth regulators, Physiological and biochemical changes of fruit ripening, phytochrome: Discovery; chemical nature; mode of action; role of low energy response (LER) and high irradiance response (HIR); red (R) and far red (FR) light on photomorphogenesis
WEEK-3
Paper 4 (GG-I)
Gene mutations: Induced versus Spontaneous mutations, Back versus Suppressor mutations, Molecular basis of Mutations in relation to UV light and chemical mutagens, Detection of mutations: CLB method, Attached X method, DNA repair mechanisms, Sex Determination, Environmental factors determining sex determination, Barr bodies, Dosage compensation
WEEK-4
Paper 4 (GG-I)
Extrachromosomal Inheritance : Chloroplast mutation/Variation in Four o' clock plant and

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Chlymodomonas, Mitochondrial mutations in *Neurospora* and yeast, Maternal effects, Infective heredity-
Kappa particles in *Paramecium*, Quantitative and multifactor inheritance, Transgressive variations,
Heterosis

Practicals, Assignment, Seminars, Group Discussion & Test

NOVEMBER, 2018

Paper 1 (PS & E)

Revision

Paper 2 (PP)

Revision

Paper 4 (GG-I)

Revision

Practicals, Assignment, Seminars, Group Discussion & Test

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