Teacher: Dr. Md Masidur Alam
B.Sc Part III (H) Botany
Broad Topic: Plant Physiology
Total Lecture: 40

Lecture	Topic	Mode
Lec. 1	Plant water relationship: Diffusion, Osmosis, Concept of water potential and its components	PPT
Lec.2	Water movement mechanism through plants	PPT
Lec.3	Absorption of water – mechanism, symplastic and apoplastic pathway	PPT
Lec.4	Ascent of sap – path, cohesion-tension theory and its critical evaluation	Whiteboard
Lec.5	Soil-Plant-Atmosphere continuum concept Cavitation and ambolism	PPT
Lec.6	Phloem Transport: Source & Sink	PPT
Lec.7	Phloem loading & unloading, and composition of phloem sap	Whiteboard
Lec.8	Mass flow hypothesis and its critical evaluation	PPT
Lec.9	Stomata - micellation of guard cell	PPT
Lec.10	Role of CO_2, K+ - ion,	Whiteboard
Lec.11	Role of blue light & abscisic acid in stomatal movement; Anti-transpirant	Whiteboard
Lec.12	Pigments - Structure of chlorophyll a & b, carotenoids, phycobilins and anthocyanins	Whiteboard
Lec.13	Absorption and Action spectra, Red drop & Emerson effet	Whiteboard
Lec.14	Hill reaction, Photosystems & Photochemical reaction centres	Whiteboard
Lec.15	Water splitting mechanism, and Cyclic and non-cyclic electron transport and photophosphorylation	Whiteboard
Lec.16	Calvin cycle and Photorespiration	Whiteboard
Lec.17	C4 cycle) and efficiency of C3 & C4 plants on crop productivity; CAM	Whiteboard
Lec.18	Glycolysis & its significance, and synthesis of acetyl Co-A	PPT
Lec.19	oxidation of cytosolic NADH + H+ (Glycerol 3 Phosphate shuttle pathway	PPT
Lec.20	Anaerobic respiration pathway; Kreb's cycle and its significance	Whiteboard
Lec.21	Oxidative pentose phosphate pathway and its significance	Whiteboard

Lec.22	Electron transport system and mechanism of Oxidative Phosphorylation	Whiteboard
Lec.23	P/e ratio; Stoichiometry of glucose oxidation, Respiratory Quotient and its significance	Whiteboard
Lec.24	Source of nitrogen for plants, Nitrification and denitrification	Whiteboard
Lec.25	Assimilation of nitrate by plant and general principle of amino acid biosysnthesis	Whiteboard
Lec.26	GS/GOGAT enzyme system	Whiteboard
Lec.27	Nitrogen fixing organisms and biochemistry of dinitrogen fixation	PPT
Lec.28	process of nodule formation; a general idea about *nif* and *nod* genes	PPT
Lec.29	Growth regulators: Auxin discovery, chemical nature bio -synthesis, physiological roles	Whiteboard
Lec.30	Gibberellins – Discovery, chemical nature, physiological roles	Whiteboard
Lec.31	Cytokinins – Discovery, chemical nature (natural and synthetic), physiological roles	PPT
Lec.32	Abscisic acid and ethylene – Discovery, chemical nature, physiological roles	PPT
Lec.33	Physiology of flowering: Photoperiodism	PPT
Lec.34	Phytochrome – chemical nature and biosynthesis, role in circadian rhythm	Whiteboard
Lec.35	Role of GA and florigen concept. Vernalization Role of cold temperature in flowering.	PPT
Lec.36	Seed Dormancy: Types, causes and methods of breaking seed dormancy.	PPT
Lec.37	Stress physiology	Whiteboard
Lec.38	Plant responses to water	PPT
Lec.39	Temperature and salt stress	PPT
Lec.40	Brief idea about stress induced gene expression (HSPs)	Whiteboard

Teacher: Dr. Md Masidur Alam
B.Sc Part III (H) Botany
Broad Topic: Plant Biochemistry (Paper VIII No.1-4)
Total Lecture: 22

Lecture	Topic	Mode
Lec. 1	Fundamental concepts of: Covalent, non-covalent & hydrogen bonds, van der Waals interactions	PPT
Lec.2	Structure & properties of water; pH and buffer	PPT
Lec.3	Henderson-Hasselbalch equation; Isoelectric point	PPT
Lec.4	Biomolecules: Proteins - structure and classification of amino acids	Whiteboard
Lec.5	Primary, Secondary, Tertiary & Quaternary structures of proteins; Ramachandran plot	PPT
Lec.6	Carbohydrates - structures of mono- , di-, oligo-& poly-saccharides	PPT
Lec.7	stereoisomers, enantiomers, epimers and anomers; sugar derivatives	Whiteboard
Lec.8	Lipids - structures of triglycerides, phospholipids and glycolipids	PPT
Lec.9	saturated and unsaturated fatty acids; β-oxidation of fatty acids	PPT
Lec.10	Membrane chemistry (composition and structure-Fluid Mosaic model)	Whiteboard
Lec.11	Membrane transport (uniport, symport, antiport),	Whiteboard
Lec.12	mechanism of ion uptake	Whiteboard
Lec.13	Signal transduction pathway and second messenger concept	Whiteboard
Lec.14	G-protein and Ca2+ as messenger	Whiteboard
Lec.15	Bioenergetics	Whiteboard
Lec.16	Laws of thermodynamics	Whiteboard
Lec.17	Open and closed systems; Exergonic and endergonic reactions	Whiteboard
Lec.18	Standard free energy ($\Delta G^{\circ\prime}$) change and free energy ($\Delta G'$) change	PPT
Lec.19	Relation between $\Delta G^{\circ\prime}$ and K′eq	PPT
Lec.20	Energy rich bond with reference to ATP	Whiteboard
Lec.21	Electromotive force, half-reaction and conjugate redox pair	Whiteboard

Lec.22	Standard reduction potential ($\Delta E°'$) and its relationship with $\Delta G°'$.	Whiteboard