

COURSE- PLANT PHYSIOLOGY AND BIOCHEMISTRY (BSCBO-303)

SYLLABUS

BLOCK -1- PLANT WATER RELATIONSHIP

Unit-1- Absorption of water and Ascent of sap: Importance of water to plant life; physical properties of water, diffusion and osmosis; absorption of water, ascent of sap

Unit-2- Loss of water from plants: Transport of water, transpiration, Physiology of stomata

Unit-3- Mineral nutrition and Absorption of mineral salts: Essential macro- and micro-elements and their role, deficiency symptoms, toxicity symptoms, absorption of mineral salt, mineral uptake

Unit-4- Organic substances- their Transport and Translocation: Mechanism of Phloem transport, source-sink relationship, factors affecting translocation

BLOCK -2- METABOLISM

Unit-5- Photosynthesis: Significance, historical aspects, photosynthetic pigments, Concept of two photosystems, Photophosphorylation, Calvin cycle, C₄ pathway, CAM plants photorespiration

Unit-6- Respiration: ATP -the biological energy currency, aerobic and anaerobic respiration, Krebs' cycle, Electron transport mechanism (chemiosmotic theory), pentose phosphate pathway

Unit-7- Nitrogen metabolism: Atmospheric nitrogen fixation, nitrogen cycle, nitrogen assimilation

Unit-8- Growth and Phases of development: Definitions, Concept of photoperiodism, physiology of flowering, Biological clocks, Physiology of senescence, Fruit ripening, Seed dormancy, Seed germination

BLOCK-3-BIOCHEMISTRY

Unit-9-Carbohydrates and Lipids: Classification, Properties and Biological role

Unit-10-Proteins, Amino acids and Vitamins: Classification, properties and biological role

Unit-11-Enzymology: Discovery, Nomenclature, Characteristics of enzymes, Concept of holoenzyme, apoenzyme, Coenzyme and cofactors

Unit-12-Biochemical techniques