

Name of the Assistant Professor: Dr. Anju
Class and Section: B.Sc. Medical (2nd Sem.)
Subject: Botany. Lesson plan session 2022-2023

April 2023

Unit: Introduction to Ecology and related Factors

Soil: Formation, composition, soil profile, Precipitation, Types of water and water cycle, Light and temperature, Shelford's law of Tolerance in brief.

Unit 2: Ecological adaptations

Ecological adaptation of hydrophytes, halophytes and xerophytes.

Unit 3: Plant communities and Phytogeography

Population Ecology: Basic concept and Characteristics, Biotic potential and growth curve, Community ecology: Concepts, qualitative and quantitative characteristics (including biological spectrum), Phytogeographical regions of India.

Unit 4: Ecosystem and biogeochemical cycles

Ecosystem: Structure and function (Trophic level, food chain, food web and ecological pyramids), Ecological efficiencies, Biogeochemical cycling: Carbon, Nitrogen and Phosphorus Cycle, Succession: Process and types.

May 2023

Unit 1 :Introduction to Plant Taxonomy

Identification, Classification, Nomenclature, Role of modern tools (Chemotaxonomy, cytotaxonomy and Numerical taxonomy) in relation to taxonomy, Functions of Herbarium, Important herbarium and botanical gardens of India and the world, Taxonomic literature: Flora, Monographs and Journals.

Unit 2: Botanical Nomenclature and Classification

Principles and rules (ICBN), Ranks and names, Binomial system, Typification, Author citation, valid publication, Rejection of names, principle of priority and its limitations, Types of classification- Artificial, Natural and Phylogenetic, Bentham and Hooker's Classification (upto order), Engler and Prantl Classification (upto order).

Unit 3: Biology and Diversity of Angiosperms-I

Types of inflorescence, Diagnostic features and economic importance of the following families: Ranunculaceae, Brassicaceae, Malvaceae, Euphorbiaceae, Fabaceae, Apiaceae.

Unit 4: Biology and Diversity of

Angiosperms-II

Diagnostic features and economic importance of the following families: Asclepiadaceae, Lamiaceae, Asteraceae, Solanaceae, Cucurbitaceae, Liliaceae and Poaceae

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Unit 1: Plant-water relations

Importance of water, water potential and its components; Imbibition, Diffusion, Osmosis, Absorption and transport of water (Transpiration pull theory), Root pressure and guttation, Transpiration and its significance; Factors affecting transpiration

Unit 2: Mineral nutrition

Essential macro and microelements and their role, Criteria of essentiality of elements; Role of essentiality of elements; Deficiency symptoms, Transport of ions across cell membrane, active and passive transport, Transport of organic substance: girdling experiment, Pressure flow model, Phloem loading and unloading.

Unit 3: Photosynthesis

Photosynthetic Pigments (Chl a, Chl b, xanthophyll, carotene); reaction center, antenna molecules action spectra, enhancement effect, Photosystem I and II, Factors affecting Photosynthesis, Electron transport and mechanism of ATP synthesis, C₃, C₄ and CAM pathways of carbon fixation, Photorespiration.

Unit -I: Respiration .

Aerobic and anaerobic respiration, Glycolysis (EMP), TCA cycle; Oxidative phosphorylation, Oxidative Pentose Phosphate Pathway, Respiratory Quotient, ATP as energy currency of cell.

May 2023

Unit 1: Enzymes

Discovery and nomenclature, Classification, Structure and properties; Mechanism of enzyme catalysis and enzyme inhibition.

Unit 2: Lipid metabolism and N'itrogen fixation

Lipid Classification, Saturated and unsaturated fatty acid, Lipid biosynthesis and oxidation, Glyoxylate cycle, Biological nitrogen fixation, Nitrate and ammonia assimilation.

Unit 3: Plant growth regulators

Discovery. physiological roles and mechanism of auxin, gibberellin, cytokinin, ABA and ethylene.

Unit 4: Plant growth & development

Definitions; phases of growth and development; the concept of photoperiodism; physiology of flowering; florigen concept; fruit ripening; Photoperiodism (SDP, LDP, Day neutral plants), Phytochrome (discovery and structure), red and far red light responses on photo morphogenesis, Vernalization, Physiology of senescence.

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