

CBO-2002

PLANT ANATOMY AND ECOLOGY

Unit-I

Meristems: Classification of Meristems; Apical Meristems: Theories of Shoot Apical Meristems: Apical Cell Theory, Histogenic layer theory, Anneau initial & meristem d'attente theory.

Root Apex: Theories of Root apex organization: Apical Cell Theory, Korper-Kappe theory, Concept of quiescent centre.

Transition of vegetative shoot apex into reproductive shoot apex.

Development of Plant Tissues: Simple and Complex tissues.

Vascular Elements: Functional Differentiation.

Wood Anatomy: Ontogeny of secondary vascular tissues, Growth rings, Heart wood & Sap wood, Porous & non-porous wood, wood parenchyma.

Unit-II

Vascular Cambium: origin, structure, seasonal changes in cambium activity, cambium in wound healing and grafting, cambium in monocotyledons.

Anomalous Secondary Growth in *Aristolochia* stem, *Mirabilis* stem, *Bougainvillea* stem and *Chenopodium* stem.

Structural variability in Leaves of *Helianthus*, *Aloe*, *Calotropis*, *Typha*, *Nymphaea* and Maize.

Systematic Plant Anatomy: with special references to trichomes, stomata, leaf anatomy, nodal anatomy, cellular contents, wood anatomy and flower anatomy.

Unit-III

Physiological characters and methods of plant community

Ecosystem - Structure and Function, Types-terrestrial (forest and grass land) and aquatic (fresh water, marine and estuarine), Energy flow, Productivity, Biogeochemical cycle (Carbon and Sulphur), Homeostasis, Optimization and Evolution

Environmental problems- Biodiversity, Biopiracy, Eco-terrorism, Desertification and Sustainable development

Environment pollution – Kinds, Sources, Effects on plants and ecosystem, Conventional and Non-Conventional energy sources.

Unit-IV

Phytogeography – Plant community of the world (terrestrial and aquatic biomes), Phyto-geographical region of world (vegetation belt), Bio-geographical zones (soil, climate, flora and vegetation) of India

Bioremediation and Environment clean up-Bioremediation, Need and Scope, Application, Future outlook and Phyto-remediation.

Conservation - Introduction, Forest conservation (Resources and importance), National Parks and Biosphere Reserve conservation.