

PANJAB UNIVERSITY, CHANDIGARH B.Sc. (General) Second Year [SEMESTER-IV]

PAPER - A : DIVERSITY OF SEED PLANTS AND THEIR SYSTEMATICS-II

Objectives : This paper deals with highly advance and evolved group of plants i.e. Angiosperms. The study of gradual transition from seedless plants to seed plants would make students familiar with origin of structural and functional complexity in plant kingdom. The systematics part of this paper is in fact backbone of the study of Botany. Without having knowledge of taxonomy and species concept, no further research work can be pursued. The identification, nomenclature and classification of the concerned plants make the first step of any research work in Botany.

Teaching Methodology : Teaching methodology includes series of lectures making use of charts, transparencies, LCD, Models, slides, practical demonstrations, extension lectures from experts, field visits, discussions, quiz competitions etc. In practicles, students would be provided with fresh materials for their morphological and anatomical studies making use of microscopes and binoculars and hands-on tools/equipment etc. Students will be taken for field excursions to various hill stations/forests to familiarize them with the flora of the area covering various families of flowering plants.

UNIT-I

General characters of Angiosperms. Plant nomenclature and International Code of Botanical Nomenclature : Common names and scientific names, principles and rules; taxonomic ranks; type concept (Holotype, Isotype, syntype, Paratype, Lectotype, Neotype and Topotype); principle of priority, aims and objectives of plant taxonomy.

A brief account of Bentham and Hooker's System of classification, its merits and demerits.

UNIT-II

Terminology pertaining to floral description.

General account and diagnostic features of the following families (excluding economic importance):

Liliaceae	:	<i>Asphodelus/Asparagus</i>
Gramineae (Poaceae)	:	<i>Triticum</i>
Ranunculaceae	:	<i>Ranunculus and Delphinium</i>
Brassicaceae	:	<i>Brassica</i>

UNIT-III

General account and diagnostic features of the following families (excluding economic importance):

Rutaceae	:	<i>Citrus and Murraya</i>
Malvaceae	:	<i>Hibiscus</i>
Fabaceae	:	<i>Lathyrus, Cassia and Acacia</i>
Umbelliferae (Apiaceae)	:	<i>Coriandrum</i>

UNIT-IV

General account and diagnostic features of the following families (excluding economic importance):

Compositae (Asteraceae)	:	<i>Helianthus/Ageratum</i>
Asclepiadaceae	:	<i>Calotropis</i>
Solanaceae	:	<i>Solanum</i> and <i>Petunia</i>
Labiatae (Lamiaceae)	:	<i>Ocimum</i>
Chenopodiaceae	:	<i>Chenopodium</i>

PAPER-B : STRUCTURE, DEVELOPMENT AND REPRODUCTION IN FLOWERING PLANTS-II

Objectives : This paper deals with structure development and reproduction in flowering plants—the most fascinating group of plants on earth. The course material of this paper deals with internal structure of various plant parts, their growth patterns and abnormalities in structural development. The vast range of variation found in this group of plants provides a platform to students for acquiring basic knowledge of flowering plants which makes a foundation of applied branches like horticulture, floriculture, olericulture and arboriculture.

Teaching Methodology : Teaching methodology includes series of lectures, making use of charts, transparencies, LCD, Models, slides, practical demonstrations, extension lectures from experts, field visits, discussions, quiz competitions etc. In practicals, students would be provided with fresh/preserved materials for their morphological and anatomical studies making use of microscopes and binoculars and hands-on tools/equipment etc.

UNIT-I

Tissue systems : Meristematic, shoot apex, root apex, simple and complex permanent tissues, special tissues; internal structure of primary dicot stem and root (*Helianthus*); secondary growth in dicot stem and root (*Helianthus*); internal structure of monocot stem and root (*Zea mays*); differences between dicot stem and monocot stem; differences between dicot root and monocot root.

UNIT-II

Anomalous stem structure in *Boerhaavia*, *Nyctanthes*, *Mirabilis* and *Dracaena*.

Various methods of vegetative propagation; micropropagation, basic technique and its importance.

UNIT-III

Types of pollination, advantages and disadvantages of self and cross-pollination; contrivances for self and cross-pollination, various agencies to bring about cross-pollination, characters of flowers pollinated by different agencies.

UNIT-IV

Seed formation : Development of endosperm and embryo. Fruit development, maturation and parthenocarpy. Significance of seed : Suspended animation; ecological adaptation and dispersal strategies.