

2206
SECOND YEAR B.Sc. Botany
PRACTICALS:

The practical exercises have been divided into following two groups :

Group-I : Taxonomy, Embryology and Economic Botany.

Group-II : Anatomy, Cytology, Genetics and Statistics.

GROUP-I

(A) TAXONOMY

1. Ranunculaceae : *Ranunculus, Nigella, Delphinium*
2. Brassicaceae : *Brassica, Raphanus, Iberis*
3. Papaveraceae : *Argemone, Papaver.*
4. Capparidaceae : *Capparis, Cleome.*
5. Caryophyllaceae : *Stellaria, Spergula, Viscaria, Dianthus* (Single)
Gypsophylla.
6. Malvaceae : *Hibiscus, Althea*
7. Rutaceae : *Citrus, Ruta, Murraya*
8. Leguminosae : *Pisum, Crotalaria ; Cassia, Caesalpinia, Bauhinia,*
Tamarindus ; Acacia, Prosopis, Mimosa.
9. Myrtaceae : *Callistemon, Eucalyptus*
10. Cucurbitaceae : *Citrullus, Cucumis*
11. Apiaceae : *Coriandrum, Foeniculum*
12. Rubiaceae : *Hamelia*
13. Asteraceae : *Helianthus, Tridax, Launaea, Ageratum.*
14. Primulaceae : *Anagallis.*
15. Apocynceae : *Catharanthus, Nerium, Thevetia.*
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16. Asclepiadaceae : *Calotropis, Leptadaenia, Cryptostegia*
17. Solanaceae : *Solanum, Nitotiana, Petunia. Datura*
18. Acanthaceae : *Barleria, Adhatoda, Justicia, Peristrophe.*
19. Lamiaceae : *Ocimum, Salvia*
20. Euphorbiaceae : *Euphorbia, Ricinus*
- 21 Poaceae : *Triticum.*

The above list of plants is only suggestive and can be replaced depending on local availability.

(B) EMBRYOLOGY SLIDES :

1. Placentation : Types
2. Ovules : Types
3. T.S. Anther
4. L.S. Mature Seed: Maize/Gram/Pea
5. L.S. bud with anther and gynoecium.
6. Pollinium (whole mount).
7. V.S. Cyathium.

8. V.S. *Ficus* inflorescence.
 9. Dissection of embryo/endosperm from monocot and dicot seeds.
- (C) All plants of economic importance as prescribed in theory paper including the ethnobotany of the following:
- i. *Butea monosperma*
 - ii. *Dendrocalamus strictus*
 - iii. *Saccharum bengalense*
 - iv. *Pongamia pinnata*

GROUP-II

(A) ANATOMY

1. Stem : *Boerhaavia, Achyranthes, Bignonia, Chenopodium, Leptadaenia, Nyctanthes, Salvadoria, Dracaena, Triticum, Mirabilis, Aristolochia, Amaranthus, Chenopodium.*
2. Root : *Tinospora, Ficus.*
3. Study of meristems through permanent slides and photographs.
4. Tissues (parenchyma, collenchyma and sclerenchyma); (temporary and permanent slides, photographs).
5. T.S. Leaf: Dicot and Monocot leaf (temporary and permanent slides).

(B) CYTOLOGY and GENETICS

Study of prokaryotic cells (bacteria), viruses, eukaryotic cells with the help of light and electron microphotographs.

Study of the photomicrographs of ultrastructure of cell organelles, Study the structure of nuclear pore complex by photograph.

Smear preparation of root tips and onion bud for different stages of mitosis and meiosis.

Study of special chromosomes (polytene & lampbrush) either by slides or photographs.

Monohybrid and Dihybrid crosses and test cross.

(C) STATISTICS

Mean, Mode, Median, Standard Deviation.

(D) EMASCULATION

T.S. Stem: Primary Structure: Monocot: *Zea mays*; Dicot: *Helianthus*; Secondary structure: *Helianthus* (only Permanent slides).

T.S. Root: Primary structure: Monocot: *Zea mays*; Dicot: *Helianthus*; Secondary structure: *Helianthus* (temporary and permanent slides).

Anamolous secondary growth in *Bignonia, Nyctanthes, Amaranthus, Dracaena, Triticum, Salvadoria, Boerhaavia, Mirabilis, Aristolochia* and *Ficus, Tinospora* root.

BOOKS SUGGESTED

Bhojwani, S.S. and Bhatnagar, S.P.: The Embryology of Angiosperms, Vikas Publishing House, Delhi, 1974.

Dutta, S.C.: Hand Book of Systematic Botany, Asia Publishing House, Bombay, 1979.
Gupta, P.K.: Cytology, Genetics and Evolution, Rastogi Publications.
Hill, A.H.: Economic Botany, McGraw Hill Book Co., 1952.
Mitra, J.N. : Elements of Systematic Botany of Angiosperms and Plant Ecology, The World Press Pvt. Ltd., Calcutta, 1977. Vikas Publishing House, Delhi.
Pandey, B.P.: Economic Botany, S. Chand And Co.Pvt. Ltd., 1988.
Tiagi, Y.D. and Kshetrapal, S. : An Introduction to Taxonomy of Angiosperms. Ramesh Book Depot, Jaipur, 1974.
P.K. Gupta : Genetics.
Sinha, U. and Sinha: Cytogenetics, Plant Breeding and Evolution.
Shukla and Chandel: Cytogenetics and Plant Breeding.
Choudhary, H.K. Elementary Principles of Plant Breeding.