

Syllabus:

B. Sc. I Year (Theory)

Semester - I

Paper I

(Diversity of Cryptogams - I)

Unit - 1 Credit - 1

1.1 Viruses:

General characters, classification based on host, economic importance, TMV – structure and multiplication

1.2 Mycoplasma:

General characters

1.3 Bacteria:

General characters, ultra structure, classification based on shape, reproduction, economic importance

1.4 Cryptogams:

General characters, classification according to G.M. Smith up to class level

1.5 Lichens:

General characters, nature of association, forms of thalli, economic importance, structure and reproduction in *Usnea*

Unit – 2 Credit- 1

2. Algae:

2.1 General characters, classification according to F.E. Fritsch (1935) up to the class level, economic importance.

2.2 Systematic position, occurrence, thallus structure, reproduction vegetative, asexual and sexual, (excluding development of sex organs) and graphic life cycle with respect to following types:

i. Cyanophyceae – *Nostoc*

ii. Chlorophyceae – *Chara*

iii. Xanthophyceae – *Botrydium*

iv. Phaeophyceae – *Sargassum*

v. Rhodophyceae – *Batrachospermum*

Unit – 3 Credit -1

3. Fungi:

3.1 General characters, classification according to Alexopoulos and Mims (1979) up to the class level, economic importance

3.2 Systematic position, occurrence, structure of mycelium, reproduction - asexual, sexual and graphic life cycle with respect to the following types:

i) Oomycetes – *Albugo*

ii) Zygomycetes – *Mucor*

iii) Ascomycetes – *Eurotium*

iv) Basidiomycetes – *Agaricus*

v) Deuteromycetes – *Cercospora*

B. Sc. I Year (Theory)

Semester - I

Paper - II

(Morphology of Angiosperms)

Unit – 1 Credit 1

1.1- Basic body plan of flowering plant, modular type of growth, diversity of plant forms – Herbs, Shrubs, Trees, Climbers; annuals, biennials and perennials.

1.2 Morphology of vegetative organs:

a) **Root:** Characteristics, functions, regions of root, types – tap and adventitious, modification of root for storage, mechanical support (stilt root) and vital functions (Pneumatophore).

b) **Stem:** Characteristics, functions, modification – underground, sub aerial and aerial

c) **Leaf:** Parts of typical leaf, phyllotaxy, types (simple and compound), diversity in shape and size, venation and modifications of leaf.

Unit – 2 Credits 2

2. Morphology of reproductive organs:

2.1 **Inflorescence:** Racemose, cymose and special types

2.2 **Flower:** Definition, parts of typical flower, forms of thalamus, androphore, gynophore, gynandrophore, insertion of floral whorls on thalamus (hypogyny, perigyny and epigyny), structure, function and modification of calyx, corolla, androecium, gynoecium, aestivation and placentation

2.3 **Fruit:** Types of fruits

2.4 **Fruit and Seed dispersal strategies.**

B. Sc. I Year (Practical)
Semester - I
Paper – III
(Diversity of Cryptogams - I)

Credits – 1.5

Note: Study of specimens of Bacteria, Algae, Fungi, through temporary mounting, permanent slides, field work and biovisual aids. Observation of disease symptoms in hosts infected by Fungi may be observed

1. Study of simple and compound microscope
2. Virus: Tobacco Mosaic Virus
3. Gram staining in bacteria, forms of Bacteria

4. Algae:

- a) *Nostoc*
- b) *Chara*
- c) *Botrydium*
- d) *Sargassum*
- e) *Batrachospermum*

5. Fungi:

- a) *Albugo*
- b) *Mucor*,
- c) *Eurotium*
- d) *Agaricus*
- e) *Cercospora*

6. **Lichens:** Form - Crustose, Foliose, Fruticose; *Usnea*.

B. Sc. I Year (Practical)
Semester - I
Paper – IV
(Morphology of Angiosperms)

Credits - 1.5

Note: Study of the following with the help of temporary mountings, permanent slides, charts, models, specimens and bio visual aids.

1. Study of root and its modifications:

- a) Tap root

- b) Adventitious root
- c) Storage roots
- d) Stilt root
- e) Respiratory root.

2. Study of stem and its modifications:

- a) Underground stem
- b) Sub aerial stem
- c) Aerial stem

3. Study of leaf and its diversity:

- a) Types of leaf (Simple, Compound)
- b) Shape and size
- c) Venation
- d) Phyllotaxy
- e) Modifications

4. Study of inflorescence:

- a) Racemose
- b) Cymose
- c) Special

5. Study of flowers:

- a) Typical flower (*Hibiscus* / *Datura*)
- b) Hypogynous, Perigynous and Epigynous
- c) aestivation
- d) Forms of corolla – cruciform, papilionaceous, infundibuliform and bilabiate
- e) Parts of typical stamen, adhesion and cohesion.
- f) Parts of typical carpel and placentation

6. Study of flowers with respect to pollination mechanism:

- a) *Calotropis*
- b) *Ocimum*
- c) *Salvia*
- d) *Helianthus*
- e) *Ficus*
- f) *Clitoria*

7. Study of fruits:

- a) Simple: legume, capsule, caryopsis, achene, drupe, berry.

b) Aggregate: an etaerio of berries, an etaerio of follicles

c) Composite fruit: sorosis, syconus

B. Sc. I Year (Theory)

Semester – II

Paper - V

(Diversity of Cryptogams - II)

Unit- 1 Credit 1

1. Bryophytes:

1.1 General characters of bryophytes, classification as per G. M. Smith

1.2 Systematic position, occurrence, thallus structure (external and internal), reproduction - vegetative, asexual, and sexual (excluding developmental stages), graphic life cycle and alternation of generations of the following types:

a) Hepaticopsida – *Marchantia*

b) Bryopsida – *Funaria*

Credits 2

2. Pteridophytes:

2.2 General characters of Pteridophytes, classification as per G. M. Smith Systematic position, occurrence, external and internal structure of sporophyte and gametophyte, reproduction (excluding developmental stages), graphic life cycle and alternation of generations of the following types:

a) Psilopsida – *Psilotum*

b) Lycopsidea – *Lycopodium, Selaginella*

c) Sphenopsida – *Equisetum*

d) Pteropsida – *Marsilea*

B. Sc. I Year (Theory)

Semester - II

Paper - VI

(Histology, Anatomy and Embryology)

Unit – 1 Credit - 1

Histology:

a) Types of tissue:

i. Meristematic tissue – Meristem, structure and types based on origin and position.

- ii. Permanent tissues: Simple, Complex and Secretary
- iii. Epidermal tissues: Trichomes and Stomata
- b) Histological organization of root and shoot apices
- c) Various theories of cellular organization

Unit – 2 Credit 1

Anatomy:

- a) Primary structure of root, stem and leaf of Monocot (Maize) and Dicot (Sunflower)
- b) Secondary growth in root and stem of Dicot (Sunflower)
- c) Wood anatomy: Growth rings, heart wood and sap wood
- d) Periderm: Origin, structure and functions.

Unit – 3 Credit 1

Embryology:

- a) Structure of anther, microsporogenesis and development of male gametophyte
- b) Structure and types of ovule, megasporogenesis and development of female gametophyte (Polygonum type).
- c) Pollination -Mechanism, types and agencies.
- d) Double fertilization and its significance
- e) Development of Dicot embryo (Crucifer type).
- f) Structure, development and types of endosperm.
- g) Structure of Dicot and Monocot seed

B. Sc. I Year (Practical)
Semester - II
Paper - VII
(Diversity of Cryptogams II)

Credits – 1.5

Note: Study of specimen of Bryophytes, and Pteridophytes through temporary mounting, permanent slides, field work and biovisual aids.

- a) Bryophytes:
 - i. *Marchantia*
 - ii. *Funaria*
- b) Pteridophytes:
 - i. *Psilotum*
 - ii. *Lycopodium*

iii. *Selaginella*

iv. *Equisetum*

v. *Marsilea*

B. Sc. I Year (Practical)
Semester - II
Paper - VIII
(Histology, Anatomy and Embryology)

Credits – 1.5

Histology:

1. Meristem: root apex and shoot apex
2. Permanent tissues – simple, complex and secretory
3. Epidermal tissues: trichomes and stomata

Anatomy:

1. Anatomy of young dicot (Sunflower) and monocot (Maize) root.
(Double stained permanent slide preparation)
2. Anatomy of young dicot (Sunflower) and monocot (Maize) stem.
(Double stained permanent slide preparation)
3. Anatomy of dicot (Sunflower) and monocot (Maize) leaf.
(Double stained permanent slide preparation)

Embryology:

1. Study of T.S. of anther
2. Structure of ovule (anatropous), types of ovules
3. Study of Dicot and Monocot seed (embryo)

B. Sc. II Year (Theory)
Semester III
Paper -IX
(Taxonomy of Angiosperms)

Credit - 1

Unit: 1

1. Salient features, origin and evolution of Angiosperms
2. Bentham and Hooker's system of classification upto series level, its merits and demerits

3. Taxonomy in relation to anatomy, embryology, palynology, ecology and cytology
4. Concept of Binomial Nomenclature and its advantages
5. Concept of genus, species and epithet.
6. Herbaria and Botanical Gardens.

Unit: 2 Credits :2

Study of the following families: systematic position, salient features, floral formula, floral diagram, common examples and their economic importance

- i. Annonaceae
- ii. Malvaceae
- iii. Leguminosae
Fabaceae (Papilionaceae)
Caesalpiniaceae
Mimosaceae
- iv. Apocynaceae
- v. Solanaceae
- vi. Acanthaceae
- vii. Lamiaceae (Labiatae)
- viii. Nyctaginaceae
- ix. Liliaceae
- x. Poaceae (Gramineae)

B.Sc.II Year (Theory)

Semester - III

Paper - X

(Plant Ecology)

Unit: 1 Credit: 1

Plant and environment:

- A) Climatic factors** – a) Light as an ecological factor, global radiation and photosynthetically active radiation
b) Temperature as an ecological factor
c) Water as an ecological factor, physicochemical properties of water

B) Edaphic factor –

Soil formation -soil profile, physicochemical properties of soil, major soil types of India, soil erosion and soil conservation

Unit: 2, Credit: 1

1. Response of plants to water

Morphological, physiological and anatomical response of plants to water – hydrophytes, xerophytes, halophytes and epiphytes

2. Phytogeography:

Biogeographical regions of India, vegetation types of India

Unit: 3 Credit: 1

1. Community ecology:

Community characteristics -frequency, density, life forms, biological spectrum

1. Ecosystem:

Structure -biotic and abiotic components, food chain, food web, ecological pyramids, energy flow, biogeochemical cycles-nitrogen and phosphorus.

B.Sc. II year (Practical)

Semester - III

Paper - XI

(Taxonomy of Angiosperms)

Credits: 1.5

Angiosperms:

Study of locally available plants of the following families:

1. Annonaceae
2. Malvaceae
3. Leguminosae
 - a) Fabaceae (Papilionaceae)
 - b) Caesalpiniaceae
 - c) Mimosaceae
4. Apocynaceae
5. Solanaceae
6. Acanthaceae
7. Lamiaceae (Labiatae)
8. Nyctaginaceae
9. Liliaceae
10. Poaceae (Gramineae)

B.Sc.II year (Practical)

Semester - III

Paper - XII

(Plant Ecology)

Credit: 1.5

1. Study of morphological and anatomical adaptations in hydrophytes – *Hydrilla*, *Eichhornia*, *Typha* and *Nymphaea* .
2. Study of morphological and anatomical adaptations in xerophytes -*Aloe*, *Nerium*, *Casuarina*.
3. Study of morphological adaptations in halophytes -Pneumatophore, Stilt roots
4. Study of morphological and anatomical adaptations in epiphytes
5. Study of vegetation by quadrat method
6. Estimation of Importance Value Index (IVI) of grassland ecosystem on the basis of relative frequency, relative density and relative abundance.
7. Determination of water holding capacity of different soils
8. Study of meteorological instruments -Rain gauge, Hygrometer, Barometer
9. Determination of percent leaf area injury of different infected leaf samples
10. Estimation of salinity of different water samples
11. Determination of pH of different soils by pH papers/universal indicator/pH meter.

B. Sc. II Year (Theory)

Semester - IV

Paper - XIII

(Gymnosperms and Utilization of Plants)

Credits 1.5

Unit: 1

Gymnosperms:

1. Salient features, classification as per Sporne 1965, economic importance
2. Geological time scale, fossilization, types of fossils, *Lyginopteris*, fossil fuels
3. Contributions of Prof. Birbal Sahani
4. Study of morphology, anatomy, reproduction (excluding developmental stages) and graphical representation of life cycle of the following types:

a) Cycadales – *Cycas*

b) Coniferales – *Pinus*

Unit:2 Credits:1.5

Utilization of Plants:

1. Domestication of plants and their centres of origin

2. History, origin, cultivation, harvesting, improved varieties and economic importance of the following plants:

i. Food plants – Wheat, Jowar

ii. Sugar – Sugarcane

iii. Fibers -Cotton, Jute

iv. Vegetable oils – Groundnut, Sunflower

v. Beverages – Tea, Coffee

3. Botanical name, family name and economic importance of the following plants:

i. Medicinal plants – *Aloe vera*, *Withania somnifera*, *Curcuma longa*, *Vitex negundo*

ii. Timber and Gum – Teak, Neem, Babul, Sisham

iii. Cosmetics and Perfumes – Rose, Mogara, Tuberose

iv. Spices – Clove, Black pepper, Cumin, Coriander, Cinnamon

B. Sc. II Year (Theory)

Semester IV

Paper XIV

(Plant Physiology)

Unit: 1 Credit 1

1. Plant water relations:

a) Diffusion, osmosis, plasmolysis and imbibition

b) Water absorption and ascent of sap (Transpiration pull theory)

c) Transpiration – Definition, types -cuticular, lenticular and stomatal, structure of stomata, mechanism of opening and closing of stomata

(Starch – sugar hypothesis)

2. Mineral nutrition:

a) Macro and microelements: roles and deficiency symptoms of N, P, K, Mg, Ca, Fe, Zn, Bo, Mo.

b) Mineral uptake – passive (Ion exchange theory) and active (carrier concept)

3. Translocation of solutes:

Mass flow hypothesis, protoplasmic streaming theory, Source and sink relationship

Unit: 2 Credits 1

1. Enzymes:

Chemical nature – holoenzyme, apoenzyme, prosthetic group, cofactor and coenzyme, properties, nomenclature, classification based on type of reactions, mechanism of enzyme action

2. Growth: Definition, Phases of Growth, Sigmoid growth curve.

3. Growth regulators:

Discovery, structure, roles and practical applications of Auxins, Gibberellins, Cytokinins, Abscisic acid and Ethylene

Unit: 3

Credit 1

1. Photosynthesis:

Definition, ultra structure of chloroplast, photosynthetic pigments, Light reactions -Hill reaction, red drop and Emerson enhancement effect, two pigment systems (PS I, PS II), photophosphorylation – cyclic and noncyclic, Z-scheme; Dark reactions -C₃, C₄ and CAM pathways

2. Respiration:

Definition, Ultra structure of mitochondria, types of respiration, Glycolysis, TCA Cycle, Electron transport system, alcoholic and lactic acid fermentation.

B.Sc. II year (Practical)

Semester IV

Paper XV

(Gymnosperms and Utilization of plants)

Credit: 1.5

Gymnosperms:

a) *Cycas*

i. Habit, young leaf, bulbils, male cone, microsporophyll, megasporophyll, pollen grains, mature seed.

ii. Study through permanent slides-Normal root (T.S.). Stem (T.S.), Ovule (L.S.)

iii. Study through hand section-Coralloid root (T.S.), Rachis (T.S.), Leaflet (T.S.)

b) Pinus

i. Habit, long and dwarf shoot, scale leaves, foliage leaves, male cone, female cone, pollengrains (W.M.), winged seed.

ii. Study through hand sections and permanent slides Root (T.S.), Stem (T.S.), Needle (T.S.)

iii. Study through permanent slide - T.L.S. & R.L.S. of stem, L.S. of male cone, L.S. of female cone

Palaeobotany:

a) Types of fossils (Specimens)

b) *Lygynopteris* (Specimen / Permanent slide)

Utilization of plants :

a) Food plants – Study of the morphology, structure, and histochemical tests of food storing tissue in Jowar & Wheat

b) Histochemical test of lignin and cellulose

c) Vegetable oils – hand section of Groundnut & Sunflower Seed and staining of oil droplets by Sudan III

d) Study of the sources of Timber, Gum, Medicinal plants, Cosmetics and Perfumes

e) Study of Black pepper, Clove, Cinnamon, Cumin, Coriander

f) Field notebook, specimen collection, and tour report.

B.Sc. II year (Practical)

Semester IV

Paper XVI

(Plant Physiology)

Credits: 1.5

1. Osmosis by egg membrane and potato osmoscope
2. Plasmolysis in *Tradescantia* leaves
3. Effect of different conc. of organic solvents on membrane permeability
4. Determination of water potential of any tuber
5. Detection of mineral elements in plant ash
6. Digestion of starch by amylase
7. Detection of enzyme activity: oxidase, peroxidase, catalase and dehydrogenase
8. Separation of chloroplast pigments by paper chromatography

9. Demonstration of Hill reaction
10. Effect of different intensities of light on photosynthesis
11. Effect of different colors of light on photosynthesis
12. Fermentation by Kuhnes fermentation vessel
13. Isolation of starch
14. Isolation of pectin
15. Estimation of total and reducing sugars in fruit juice by Fehling solution
16. Separation of amino acids by paper chromatography
17. Effect of IAA and Gibberellins on seed germination

B.Sc.III Botany (Theory)
Semester -V
Paper XVII
(Cell Biology & Molecular Biology)

Unit-1 Credit-1

1. Cell:

Structure of Prokaryotic cell (Bacterial cell) and Eukaryotic cell (Plant cell)

2. Cell wall and cell organelles:

Structure and functions of cell wall and Cell organelles – Golgi complex, Endoplasmic reticulum, Lysosomes

3. Nucleus:

Ultra structure, (nuclear membrane, nucleolus, chromatin material, (nucleoplasm), Functions of nucleus.

Unit-2 Credit-1

1. Cell division:

- a) Cell cycle -G1 phase, S phase, G2 phase and M phase
- b) Mitosis – definition, process and significance.
- c) Meiosis- definition, process and significance.

2. Nucleic acids:

- a. DNA: Definition, structure, chemical composition (nitrogenous bases, purines, pyrimidines, nucleosides, nucleotides, phosphate and sugars) Watson and Crick's model, Z - DNA, B - DNA, functions of DNA
- b. Replications of DNA – conservative, semi conservative and dispersive.

c. RNA: Structure, types and functions

Unit-3 Credit-1

1) Chromosome:

Definition, morphology-size, shape, number, Ultra structure – chromatid, chromonema, chromomere, centromere, kinetochore, secondary constriction, satellite, telomere, heterochromatin, euchromatin, Nucleosome model (Woodlock 1973), chemical composition, Functions of chromosome, Giant chromosomes-polytene and lampbrush chromosome.

2) Chromosomal aberrations:

a) Structural-deletion, duplication, inversion and translocation

b) Numerical: – euploidy and aneuploidy

B.Sc. III Year (Theory)

Semester – V

Paper XVIII (A)

(Diversity of Angiosperms-I)

Unit: 1 Credit-1

1. Biodiversity

Definition, concept, origin and evolution

2. Types of biodiversity:

Species, genetic, ecological, cropland and agricultural diversity; biodiversity in India; endemism and hot spots; threatened species, threats to biodiversity

3. Conservation of biodiversity:

Major causes for loss of biodiversity, listing of threatened biodiversity; threatened categories – extinct, endangered, vulnerable, rare and indeterminate. Conservation measures: – ex-situ, and in-situ; biodiversity conservation in India.

Unit -2 Credit -2

Phytotaxonomy:

Classification of Angiosperms with special reference to Linnaeus, A. P. de Candolle, Bentham and Hooker.

Study of diversity following families with reference to the system of classification of Bentham and Hooker

1. Magnoliaceae 2. Nymphaeaceae

3. Papveraceae . 4. Brassicaceae

5. Capparidaceae . 6. Rutaceae

7. Rhamnaceae 8. Combretaceae

9. Lythraceae 10. Cucurbitaceae

11. Apiaceae

B.Sc. III Botany (Practical)
Semester -V
Paper XIX
(Cell Biology & Molecular Biology)

Credit – 1.5

Unit-1

1. Study of the cell structure from onion leaf or *Tradescantia* leaf
2. Preparation of cytological (AA, FAA etc.) fixatives and stains (acetocarmine, aceto-orcein).
3. Study of electron micrographs of viruses, bacteria and cyanobacteria
4. Study of electron micrographs of eukaryotic cell and different cell organelles
5. Preparation of slides for the study of mitosis (root tips of onion)
6. Preparation of slides for the study of meiosis (*Rhoeo*, *Aloe* or onion flower buds)
7. Preparation of idiogram from the given micrograph of karyotype
8. Observation of giant chromosomes in *Chironomous* larvae
9. Preparation of wool models of mitosis, meiosis, cell structure, Chromosome, DNA and RNA.

B.Sc. III Year (Practical)
Semester – V
Paper XX (A)
(Diversity of Angiosperms-I)

Unit: 1 Credits-1.5

1. Study of herbarium
2. Study of analytical characters
3. Preparation of indented and bracketed keys
4. Study of following families:
 1. Magnoliaceae
 2. Nymphaeaceae
 3. Papaveraceae
 4. Brassicaceae

5. Capparidaceae
6. Rutaceae,
7. Rhamnaceae
8. Combretaceae
9. Lythraceae
10. Cucurbitaceae
11. Apiaceae,
5. Mounting of pollen grains (acetolysis method)

B.Sc.III (Theory)
Semester -VI
Paper XXI
(Genetics and Biotechnology)

Credit: 1

Unit: 1

1. Mendelism:

- i. Introduction -G.J. Mendel
- ii. Mendelian principles –Law of Dominance, law of segregation, law of independent assortment, back cross and test cross

2. Interaction of genes:

- i. Allelic interaction: incomplete dominance, co dominance, lethal genes and blood group inheritance
- ii. Non allelic and non epistatic -comb shapes in fowls
- iii. Non allelic and epistatic:
 - a) Complementary genes or duplicate recessive epistasis (9:7)
 - b) Supplementary genes or recessive epistasis (9:3:4)
 - c) Dominant epistatic genes or dominant epistasis (12:3:1)
 - d) Duplicate genes or duplicate dominant epistasis (15:1)

3. Sex determination:

- i. Chromosomal theory of sex determination
- ii. Mechanism of sex determination in man (xx -xy), Drosophila (xx and xy), birds (zz-zw), grasshopper (xx-xo) and genic balance theory in Drosophila
- iii. Sex determination in plants – *Melandrium*

Unit: 2, Credit: 1

1. Sex linked inheritance:

X, XY and Y linked inheritance:

- i) Colourblindness and hemophilia in man
- ii) Holandric genes
- iii) White eye colour in Drosophila,
- iv) Gynandromorphs,

2. Structure and function of gene:

- i. Fine structure of gene (Seymour Benzer)
- ii. One gene one enzyme hypothesis
- iii. Genes and related diseases – phenylketonuria, and alkaptonuria
- iv. Detection of genetic diseases – amniocentesis Genetic counseling

Unit: 3, Credit: 1

Biotechnology:

- 1. Concept of genetic engineering and recombinant DNA technology
- 2. Restriction endonucleases, their properties and uses
- 3. Cloning vectors -plasmids and phage vectors
- 4. Techniques of genetic engineering -isolation of desired gene, gene cloning, transfer of gene into plants
- 5. Applications of genetic engineering

B.Sc. III Year (Theory)

Semester – VI

Paper XXII (A)

(Diversity of Angiosperms-II)

Unit: 1 Credit-1

Plant identification: keys, herbaria and botanical gardens

Origin of angiosperms: origin and evolution, Bennettitalean,

Ranalian and Caytonial theory

Binomial nomenclature: Principles and rules

Modern trends in taxonomy:

Cytotaxonomy, chemotaxonomy, and numerical taxonomy

Unit: 2 Credits- 2

1. Phytotaxonomy:

Study of Engler & Prantle, Hutchinson, Takhtajan system of classification

2. Study of diversity of families:

- a. Asclepiadaceae
- b. Scrophulariaceae
- c. Oleaceae
- d. Convolvulaceae
- e. Verbenaceae
- f. Amaranthaceae
- g. Euphorbiaceae
- h. Orchidaceae
- i. Liliaceae
- j Commelinaceae

B.Sc. III (Practical)

Semester -VI

Paper XXIII

(Genetics and Biotechnology)

Credits: 1.5

1. Quiz
2. Working out laws of inheritance by using seed mixtures
3. Problems based on gene interaction
4. Problems based on sex linked inheritance

B.Sc. III Year (Practical)

Semester – VI

Paper XXIV (A)

(Diversity of Angiosperms-II)

Credits-1.5

1. Study of following families:

1. Oleaceae
2. Asclepiadaceae

3. Convolvulaceae
4. Scrophulariaceae
5. Verbenaceae
6. Amaranthaceae
7. Euphorbiaceae
8. Orchidaceae
9. Liliaceae
10. Commelinaceae