

BOT - 201 :PLANT PHYSIOLOGY, PLANT ECOLOGY, PLANT ANATOMY,  
MEDICINAL PLANTS AND PLANT PATHOLOGYUnit - I **Plant Physiology**

- Imbibition and Osmosis
- Plant Movement: Definition and types of movements
- Photosynthesis: Definition, pigments, light and dark reaction, C<sub>3</sub> and C<sub>4</sub> cycle, factors affecting photosynthesis

Unit - II **Plant Ecology**

- Ecological adaptations, morphological and anatomical characters of Hydrophytes, Mesophytes and Xerophytes with appropriate examples

Unit - III **Plant Anatomy**

- Tissue system: Meristematic and Permanent tissue
- Vascular Bundle: Definition and types
- Stele: Definition and types
- Ergastic matters: starch grain, raphides, sphaerephides, aleurone grain and cystolith

Unit - IV **Medicinal Plants**

- Scientific name, family, part use and medicinal uses of following:
  - ❖ *Ocimum sanctum*
  - ❖ *Adhatodavasica*
  - ❖ *Aloe barbedense*
  - ❖ *Azadirachtaindica*
  - ❖ *Abrusprecatorius*
  - ❖ *Zingiberofficinale*

Unit - V **Plant Pathology**

- Causal organisms, symptoms and control measures of the following plant diseases:
  - ❖ Leaf spot of Mango
  - ❖ Red rot of Sugarcane
  - ❖ Bacterial blight of Paddy
  - ❖ Little leaf of Brinjal
  - ❖ Citrus canker



**BOT - 202 :PLANT DIVERSITY AND WEED MANAGEMENT****Unit - I Weed management**

- Introduction
- Invasive weeds: concept and causes of their dominance
- Weed control: Physical, chemical and biological methods
- Sustainable use of weeds

**Unit - II Gymnosperm**

- Classification, external morphology, internal structure, reproduction and alternation of generation in Cycas.

**Unit - III Morphology**

- Phyllotaxy: Definition and Types with examples.
- Aestivation: Definition and types with examples
- Inflorescence: Definition and Types: Racemose and Cymose
- Placentation: Definition and Types with examples.

**Unit - IV ANGIOSPERMS**

- Classification as per Bentham & Hooker's system of Classification, general characters, economic and medicinal importance, Botanical name of common important plants of the following families.

- ❖ Malvaceae
- ❖ Apocynaceae
- ❖ Convolvulaceae
- ❖ Nyctaginaceae
- ❖ Amarillidaceae

**Unit - V Conservation of plant diversity**

- Concept and need, Methods of in-situ and Ex-situ conservation
- Botanical garden
- Forests: Importance of forests and their conservation.



**BOT - 203 :PLANT PHYSIOLOGY, PLANT ECOLOGY, PLANT ANATOMY, MEDICINAL PLANTS AND PLANT PATHOLOGY, PLANT DIVERSITY AND WEED MANAGEMENT**

- The candidates should study the typical vegetation in natural condition and should record their observation in journals. Excursion should be arranged during the year to local places.
- Every candidate shall complete laboratory course in accordance with the regulations issued from time to time by Academic Council on the recommendation of the Board of Studies.
- Every candidate shall record observation directly in the laboratory journal. Every journal shall be signed periodically. At the end of the semester candidate shall produce certified journal during the practical examination.

**Practical :1 Plant physiology (Experiment to be demonstrated)**

- (i) Imbibition and Imbibition force
  - ❖ Test tube experiment.
  - ❖ Indicator experiment
- (ii) Plant movements
  - ❖ Geotropism
  - ❖ Phototropism
  - ❖ Hydrotropism
- (iii) Photosynthesis
  - ❖ Mohl's half leaf experiment
  - ❖ Light is necessary for photosynthesis

**Practical :2 Plant ecology (Fresh specimens to be shown to the students):**

- Hydrophytes:
  - ❖ Hydrilla, Vallisneria, Eichhornia, Pistia, Nymphaea, Marsilea.
- Mesophytes:
  - ❖ Coriander, Trigonella, Garlic (Entire plants)
- Xerophytes:
  - ❖ Solanumxanthocarpum, Casuarina, Aloe vera, Opuntia, Euphorbia tiruculli

**Practical :3 Tissue: To study following permanent slides:**

- i Root apex
- ii Shoot apex
- iii Parenchyma
- iv Aerenchyma
- v Chlorenchyma
- vi Collenchyma
- vii Sclerenchyma
- viii Xylem- Spiral vessels, Pitted vessels
- ix Phloem elements

Practical :4 **Stele:** Study of stele from permanent slides:

- Actinostele
- Plectostele
- Amphiphloic siphonostele
- Eustele
- Atactostele

Practical :5 **Vascular Bundles:** Study of various types of Vascular bundles from Permanent slides.

- Radial
- Amphicribal (Hadrocentric)
- Collateral and open
- Collateral and closed
- Bicollateral

Practical :6 **Non living cell contents:** Slides are to be prepared by the students from given materials.

- Starch grains: Potato tuber, Wheat or Rice, Euphorbia tiruculli.
- Mineral Crystals:
  - (a) Raphides: Pothos, Colocasia petiole
  - (b) Sphaeraphides: Opuntia, Nerium leaf

Practical :7 **Medicinal plants:** Scientific name, family, part use and medicinal uses of following:

- Ocimum sanctum
- Adhatodavastica
- Aloe barbedense
- Azadirachtaindica
- Abrusprecatorius
- Zingiberofficinale

Practical :8 **Plant pathology:** Causal organisms, symptoms and control measures of the following plant diseases



- Leaf spot of mango
- Red rot of Sugarcane
- Bacterial blight of Paddy
- Little leaf of Brinjal
- Citrus Canker

Practical :9 **Weed Management:** Observation of weeds with reference to Botanical Name, Family, Morphological peculiarities:

- Native – Cynodon, Cyprus, Amaranthus, Panicum
- Exotic/Invasive – Alternanthera, Desmostachya, Euphorbia, Malachara

Practical :10 **Gymnosperms (Cycas)**

- Preparation of slides from the fresh material by the students -:
  - ❖ T.S. of Rachis
  - ❖ T.S. of Leaflet
- Permanent Slides: T.S. of Leaflet, T.S. of Rachis, T.S. of Coralloid root, T.S. of Microsporophyll, T.S. of Megasporophyll, L.S. of Ovule
- Preserve Specimen: Coralloid root, Microsporophyll and Megasporophyll

Practical :11 **Phyllotaxy:**

- (i) Distichous phyllotaxy
- (ii) Tristichous
- (iii) Pentastichous
- (iv) Opposite superpose
- (v) Opposite decussate
- (vi) Verticillate or Whorled
- (vii) Leaf mosaic
- (viii) Heterophylly

Practical :12 **Aestivation**

- Valvate: Calyx of *Hibiscus rosasinensis*
- Twisted: Corolla of *Hibiscus rosasinensis*
- Imbricate: Corolla of *Caesalpinia pulcherrima*
- Quincuncial: Corolla of *Antigonon leptopus*
- Vexillary: Corolla of *Clitoria ternatea*

Practical :13 **Inflorescence:**

- RACEMOSE
  - (a) Raceme: *Caesalpinia pulcherrima*, *Brassica juncea*
  - (b) Spike: *Achyranthus aspera*, *Polianthes tuberosa*
  - (c) Spadix: *Colocasia*



(d) Capitulum: *Helianthus*, *Tridax*

(e) Spikelets: Poaceae (any plant)

(f) Corymb: Cassia, Ixora

(g) Umbel: Coriandrum

(h) Capitate: Acacia, Albizzia

(i) Capitulum: Helianthus, Tridax

➤ CYMOSE

Unbranched:

(a) Solitary Terminal: Datura

(b) Solitary Axillary: Hibiscus

Branched:

(c) Helicoid: Hamelia

(d) Scorpioid: Heliotropium

(e) Dichasial or Biparous: Clerodendrum, Nyctanthus, Jasminum

(f) Polychasial or Multiparous: Nerium, Calotropis

Practical :14 **Placentation:** Study of Placentation to be demonstrated by permanent slides.

(i) Marginal

(ii) Axile

(iii) Free central

(iv) Parietal

(v) Superficial

(vi) Basal

Practical :15 **Angiosperm: (Families)**

➤ Study of Morphological characters, floral dissection, T.S. of Ovary and floral formulae of following families.

(i) Malvaceae : *Hibiscus rosasinensis*, *Thespesia*, *Gossypium*

(ii) Convolvulaceae: *Ipomea*, *Ipomoea*

(iii) Apocynaceae : *Nerium*, *Allamanda*, *Catharanthus roseus*

(iv) Nyctaginaceae : *Bougainvillia*, *Mirabilis*

(v) Amaryllidaceae : *Crinum*, *Polianthes*



## References:

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