

## 2S – BOTANY

### Gymnosperm, Morphology of Angiosperms and Utilization of Plants

#### UNIT-I: Palaeobotany (15)

- 1.1. Process of plant fossilization and types of fossils
- 1.2. Geological Time Scale
- 1.3. Fossil Gymnosperms
- 1.3.1. Pteridospermales: *Lyginopteris oldhamia*
- 1.3.2. Bennettitales: *Bennettites*

#### UNIT-II : Gymnosperms (15)

- 2.1. Classification according to D. D. Pant
- 2.2. General account: morphology, anatomy, life cycle and taxonomic position of *Pinus* and *Gnetum*
- 2.3. Affinities with pteridophytes and angiosperms
- 2.4. Economic importance of Gymnosperms

#### UNIT-III : Morphology (15)

- 3.1. Diversity in Plants habits – Annual, biannual, perennials
- 3.2. Roots – Types of root : tap and adventitious, modification of root : for food storage, respiration, and supports.
- 3.3. Stem – Types of Stem, Characteristic features, branching, modification of Stem – Underground and aerial
- 3.4. Leaf – Parts of leaf, types of leaves – simple and compound; Phyllotaxy; Venation; Stipule. Modification of leaves

#### UNIT-IV : Morphology (15)

- 4.1. Inflorescences – Types: Racemose, Cymose and Special.
- 4.2. Flower – Flower as modified shoot; Structure of flower – Calyx, Corolla, Androecium and Gynoecium. Placentation; Types of Pollination.

#### UNIT-V : Morphology and Utilization of Plants (15)

- 5.1. Fruits – Morphological types
- 5.2. Utilization of Plants
- 5.2.1. Food Plants – Wheat, Potato – Morphology, varieties and economic importance.
- 5.2.2. Fiber Plant – Morphology, varieties and economic importance of Cotton.
- 5.2.3. Oil yielding Plant – Morphology, Varieties and economic importance of Ground nut.

#### UNIT-VI : Utilization of Plants (15)

- 6.1. Spices – General account and economic importance of Black pepper, Clove, Cinnamon and Cardamom
- 6.2. General account and sources of firewood, timber and Bamboos.
- 6.3. Essential oils – General account, economic importance of Eucalyptus.
- 6.4. Pharmacognosy and Phytochemistry with respect to following medicinal plants –
  - 6.4.1. *Aloe vera*
  - 6.4.2. *Adathoda vasica*
  - 6.4.3. *Asparagus racemosa*
  - 6.4.4. *Azadirachta indica*
  - 6.4.5. *Catharanthus roseus*
  - 6.4.6. *Chlorophytum borivillianum*
  - 6.4.7. *Emblica officinalis*
  - 6.4.8. *Ocimum sanctum*
  - 6.4.9. *Rauwolfia serpentina*
  - 6.4.10. *Vitex negundo*
  - 6.4.11. *Withania somnifera*

## LABORATORY EXERCISE

- I. Gymnosperms: Morphology and anatomy of the following members –
  - a. Pinus
  - b. Gnetum
- II. Preparation of double stained permanent mount of Pinus stem, needle and Gnetum stem and leaf.
- III. Study of fossil slides of Lyginopteris and Bennettites
- IV. Detailed morphological study of types of root, stem and leaf with its modifications
- V. Forms of corolla
- VI. Types of placentation
- VII. Morphology of fruits
- VIII. Morphology of plant parts used and medicinal plants prescribed in syllabi
- IX. Utilization of plants: Spices, fiber yielding plants and food plants prescribed in syllabi

### Semester – II Practical Schedule

Time : 4 hours

Marks : 50

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| Q1. Preparation of double stained permanent mount of given Gymnospermic material and identification with reasons   | 10 |
| Q2. Comments on given Morphological specimens <ol style="list-style-type: none"><li>i. Root</li><li>ii. Stem</li><li>iii. Leaf</li><li>iv. Inflorescence</li><li>v. Flower</li><li>vi. Fruit</li></ol> | 12 |
| Q3. Comment on given medicinal plant with reference to morphology, part used and medicinal importance (Any two)  | 10 |
| Q4. Spotting (02 marks each) <ol style="list-style-type: none"><li>a) Palaeobotany, b) Gymnosperms and c) Utilization of Plant (food, fibers, spices) (2 Materials)</li></ol>                          | 08 |
| Q5. Practical record   | 5  |
| Q6. Viva voce and Excursion report   | 5  |