

**VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT.**

**S.Y. B.Sc.**

**BOTANY**

**PAPER- III**

**(Morphology, Classification of Non vascular And Vascular Plants  
and Plant Pathology)**

**(EFFECTIVE FROM JULY 2007)**

**UNIT I : MORPHOLOGY**

**A: WEAK STEM PLANTS**

- (i) Creepers
- (ii) Trailers
- (iii) Climbers
  - (a) Twiners or stem climbers
  - (b) Tendril climbers
  - (c) Root climbers
  - (d) Scramblers and hook climbers
  - (e) Adhesive climbers
- (iv) Lianes

**B: DEFENSIVE DEVICES OF PLANTS**

- (i) Thorns, spines and prickles
- (ii) Stinging hairs
- (iii) Sticky glandular hairs

**C: INFLORESCENCE**

Definition, types: Racemose, Cymose and  
Special types of inflorescence with examples.

**NON VASCULAR PLANTS**

**UNIT II: ALGAE**

Classification and life history of the following types:

- (i) Cyanophyceae: Oscillatoria & Nostoc
- (ii) Chlorophyceae: Oedogonium & Ulothrix
- (iii) Pheophyceae: Ectocarpus
- (iv) Rhodophyceae: Batrachospermum

### **UNIT III: FUNGI**

Classification and life history of the following types :

- (i) Phycomycetes: Pythium
- (ii) Ascomycetes: Peziza
- (iii) Basidiomycetes: Puccinia

### **UNIT IV: LICHENS**

Types of Lichens, Thallus structure, Reproduction and Uses.

### **UNIT V: BRYOPHYTA**

Classification and life history of Anthoceros  
(Except development)

## **VASCULAR PLANTS**

### **UNIT VI: PTERIDOPHYTA**

Classification and life history of Equisetum  
(Except development)

### **UNIT VII: GYMNOSPERM**

Classification and life history of Pinus  
(Except development)

### **UNIT VIII: ANGIOSPERM**

Classification, general and distinguishing characters of the following families and examples (Scientific name), Classification according to Bentham and Hooker system.

Brassicaceae (Crusiferae), Rosaceae,  
Leguminoaceae (Papilionaceae, Caesalpiniaceae, Mimosaceae)  
Combretaceae, Myrtaceae, Rubiaceae, Asclepiadaceae, Convolvulaceae,  
Scrophulariaceae, Verbenaceae, Lamiaceae (Labiatae), Euphorbiaceae,  
Liliaceae, Arecaceae (Palmae).

### **UNIT: IX PLANT PATHOLOGY**

General information, Pathogen (Scientific name), symptoms and preventive measures of the following diseases.

1. Late blight of potato
2. Tikka disease of ground nut
3. White rust of crucifer
4. Red stripe of sugar cane
5. Soft rot of apple
6. Tobacco mosaic virus (TMV)

**VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT.**

**S.Y. B.Sc.**

**BOTANY**

**PAPER- IV**

**(Physiology, Ecology, Plant Geography, Economic Botany,  
Anatomy, Cytology And Genetics)**

**UNIT: I PHYSIOLOGY**

**1. RESPIRATION:**

Definition, types of respiration (Aerobic and Anaerobic), Krebs's cycle, factors affecting the rate of aerobic respiration in plants.

**2. PHYSIOLOGY OF FLOWERING:**

**(i) PHOTOPERIODISM:**

Definition, classification of plants  
(based on photoperiodic responses),  
Photoperiodic induction,  
Phytochromes and flowering.

**(ii) VERNALIZATION:**

Vernalization and flowering,  
Technique of vernalization,  
Inductive types,  
The stimulus of vernalization,  
Mechanism and practical application of  
vernalization.

**(iii) SEED DORMANCY AND GERMINATION:**

Definition, factors responsible for dormancy,  
Mechanism of dormancy and the methods of breaking  
the dormancy,  
Germination of seeds,  
Changes in germination,  
Conditions essentials for germination.

**(iv) INSECTIVOROUS PLANTS:**

Study of different kinds of Insectivorous plants.

**UNIT: II ECOLOGY**

**(i) ECOLOGICAL FACTORS:**

Climatic and Edaphic factors

- (ii) PLANT COMMUNITIES:  
Halophytes and Epiphytes
- (iii) SOIL EROSION AND CONSERVATION

**UNIT: III PLANT GEOGRAPHY**

- (i) MINOR FOREST PRODUCTS OF GUJARAT
- (ii) CULTIVATION OF THE FOLLOWING CROPS IN RELATION TO THEIR ORIGIN, DISTRIBUTION, CLIMATE, SOIL, PROPAGATION, METHOD OF CULTIVATION AND USES.  
(A) Sugarcane (b) Rice (c) Wheat

**UNIT: IV ECONOMIC BOTANY**

**MEDICINAL PLANTS:**

Scientific name, family, parts used and medicinal uses of the following plants.

- (i) *Tylophora indica* (Dam vel)
- (ii) *Hemidesmus indicus* (Anant mool)
- (iii) *Achyranthes aspera* (Aghedo)
- (iv) *Terminalia arjuna* (Arjun sadad)
- (v) *Terminalia chebula* (Harde)
- (vi) *Terminalia belerica* (Behda)
- (vii) *Embelica officinalis* (Ambla)
- (viii) *Centella asiatica* (Bhrami)
- (ix) *Helicteres isora* (Marda singh)
- (x) *Gymnema sylvestre* (Madhunasini)

**UNIT: V ANATOMY**

**ANOMALOUS SECONDARY GROWTH:**

Definition and types

Study of anomalous secondary growth seen in the following plants.

- (i) Bignonia (ii) Nyctanthus (iii) Boerhaavia
- (iv) Salvadora (v) Dracena.

**UNIT: VI CYTOLOGY**

Fine structure and functions of Chloroplast and Mitochondria.

**UNIT: VII GENETICS**

Lethal genes, Incomplete dominance, Linkage and Crossingover.

**VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT.**

**S.Y. B.Sc.**

**BOTANY**

**PAPER- V**

**(Structural Variation, Classification, Non Vascular And Vascular Plants, Physiology)**

**UNIT: I MORPHOLOGY**

Morphology and classification with reference to the following types.

- (i) Bracts
- (ii) Stipules
- (iii) Phyllotaxy
- (iv) Fruits

**UNIT: II ALGAE**

Classification and life history of the following types.

- (i) Cyanophyceae: Gloeotrichia
- (ii) Chlorophyceae: Zygnema
- (iii) Phaeophyceae: Dictyota
- (iv) Rhodophyceae: Gracillaria.

**UNIT: III FUNGI**

Classification, life history and Economic Importance of the following types.

- (i) Phycomycetes: Rhizopus
- (ii) Ascomycetes: Aspergillus (Eurotium)
- (iii) Basidiomycetes: Polyporous.

**UNIT: IV BRYOPHYTA**

Classification and life history of the following types.

(Except development)  
Marchantia

**UNIT: V PTERIDOPHYTA**

Classification and life history of the following types.

(Except development)  
Selaginella

**UNIT: VI GYMNOSPERM**

Classification and life history of the following types.

(Except development)  
Zamia

## **UNIT: VII ANGIOSPERM**

Classification, general and distinguishing characters of the following families and examples (Scientific name), Classification according to Bentham and Hooker system.

Dicotyledon:

Nymphaeaceae, Capparaceae (Capparidaceae), Bombacaceae, Sterculiaceae, Anacardiaceae Passifloraceae, Asteraceae (Compositae), Bignoniaceae, Moraceae.

Monocotyledon:

Pontidariaceae, Cannaceae, Cyperaceae.

## **UNIT: VIII PHYSIOLOGY**

- (i) Solutions, suspensions and colloids.
- (ii) Carbohydrates: Classification and Properties
- (iii) Enzymes: Classification and Properties.
- (iv) Lipids and Fats: Classification and Properties.