

Veer Narmad South Gujarat, University, Surat
T.Y. B. Sc. Botany Syllabus (As per CBCS System)
Effective from June-2013
Subject wise credit

SEM	Course	Paper No.	Hours/Week	Credit	Practical No.	Hours/Week	Credit
V	Core I	BOT 501	2	2	XI	2	2
		BOT 502	2	2		2	
		BOT 503	2	2	XII	2	2
		BOT 504	2	2		2	
		BOT 505	2	2	XIII	2	2
		BOT 506	2	2		2	
	F.C. (English)		3	2	-	-	-
E.C. CAN	Horticulture	3	2	-	-	-	
NSS/NCC/Saptadhara		3	2	-	-	-	
VI	Core I	BOT 601	2	2	XIV	2	2
		BOT 602	2	2		2	
		BOT 603	2	2	XV	2	2
		BOT 604	2	2		2	
		BOT 605	2	2	XVI	2	2
		BOT 606	2	2		2	
	F.C. (English)		3	2	-	-	-
	E.C. CAN	Gardening	3	2	-	-	-
NSS/NCC/Saptadhara		3	2	-	-	-	

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T.Y.B.Sc. (To be implemented from June-2013) Theory Courses			
Paper	Semester –V	Paper	Semester-VI
BOT-501	Algae and Fungi	BOT-601	Pteridophytes and Paleobotany
BOT-502	Plant Pathology and Bryophyte	BOT-602	Gymnosperms, Fossil Gymnosperms And Botanical Techniques
BOT-503	Plant Biotechnology, Biostatistics And Molecular Biology	BOT-603	Cell Biology And Genetics
BOT-504	Plant Physiology And Biochemistry	BOT-604	Plant Ecology And Phyto-Geography
BOT-505	Anatomy and Embryology	BOT-605	Economic Botany And Pharmacognosy
BOT-506	Elective Paper: Angiosperm Morphology Systematic Botany & Environmental Issue	BOT-606	Elective Paper: Angiosperm Taxonomy & Palynology
CAN	Horticulture	CAN	Gardening

Practicals based on theory papers-

Pra. XI	Algae, Fungi, Bryophyte & Plant Pathology	Pra. XIV	Pteridophytes, Gymnosperms, Paleobotany & Botanical Techniques
Pra. XII	Plant Physiology, Biochemistry & Embryology	Pra. XV	Plant Ecology, Phyto-Geography, Cell Biology And Genetics
Pra. XIII	Angiosperm & Anatomy	Pra. XVI	Economic Botany, Pharmacognosy, Palynology & Angiosperm Taxonomy

T.Y.B.Sc.
SEMESTER V
BOTANY

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EFFECTIVE FROM JUNE-2013

SEMESTER-V

BOTANY PAPER-501

BOT-501: ALGAE AND FUNGI

UNIT-1

General introduction of Algae

- Habit and habitat
- Thallus organization
- Classification according to Smith, General characters, structure and reproduction of the following classes:
 - I. **Cyanophyta**
 - II. **Chlorophyta**
 - III. **Phaeophyta**
 - IV. **Rhodophyta**

UNIT-2

Life History of Algae

- Life history of the following types on the basis of their classification with reasons, occurrence, thallus structure, cell structure and reproduction (Excluding development)
 - I. **Cyanophyceae - *Rivularia & Tolypothrix***
 - II. **Chlorophyceae- *Volvox & Chara***
 - III. **Phaeophyceae - *Sargassum***
 - IV. **Phodophyceae- *Polysiphonia***
 - V. **Bacillariophyceae- *Navicula***

UNIT-3

General introduction of Fungi

- Classification (Aim worth), and general characters of fungi
- Habitat, thallus, cell-structure, Nutrition, growth and reproduction in division Eumycota

UNIT-4

Life history of Fungi

- Life history of the following types on the basis of their classification with reasons, occurrence, vegetative structure and reproduction (Excluding development).

I. Mastigomycotina- *Albugo*

II. Zygomycotina- *Pilobolus*

III. Ascomycotina- *Penicillium*

IV. Basidiomycotina- *Agaricus*

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SEMESTER-V

BOTANY PAPER-502

BOT-502 PLANT PATHOLOGY AND BRYOPHYTE

UNIT-1

Plant Pathology

- Introduction & History of Plant Pathology
- Indian Plant Pathologist
- Reasons for plant diseases
- Origin of plant diseases
- Identification and characters of plant diseases
- Principles of control of plant diseases
- Fungicides
- Biopesticides

UNIT-2

Plant diseases according to plant pathogen

- **Bacterial diseases**
 - Wilt disease of potato
 - Leaf spot of mango
- **Fungal diseases**
 - Tikka disease of groundnut
 - Wilt of cotton
 - Powdery mildew of barley
 - Blast disease of Rice

- **Viral diseases**
 - Leaf curl of papaya
 - Yellow vein disease of Bhindi
 - Bunchy top banana

UNIT-3

General accounts of Bryophytes

- Amphibian adaptation of Bryophytes
- General characters and Classification
- General account of Hepaticopsida, Anthocerotopsida, Bryopsida
- Ecological aspects of Bryophyta
- Economic importance of Bryophytes

UNIT-4

Life History of Bryophytes

- Classification, life history of the following types (Excluding development)
 - I. **Hepaticopsida : *Marchentia and Porella***
 - II. **Anthocerotopsida: *Notothylus***
 - III. **Bryopsida: *Sphagnum***

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SEMESTER-V

BOTANY PAPER-503

**BOT: 503- PLANT BIOTECHNOLOGY, BIOSTATISTICS AND
MOLECULAR BIOLOGY**

UNIT-1

Molecular Biology

- r-DNA methods- Merits, Demerits and Application
- Restriction endonuclease and Ligase
- Cloning vectors
- DNA- Finger printing
- PCR (Polymerize Chain Reaction)

UNIT-2

Plant Biotechnology-I

- Definition, History and Importance of Biotechnology
- Somatic Hybridization
- Artificial seed
- Anther culture
- Embryo culture

UNIT-3

Plant Biotechnology-II

- Clonal Propagation
- Genetic engineering of plant

- Genetic manipulation in plant cell
- Uses of biotechnology

UNIT-4

Biostatistics

- History of Biostatistics
- Definition, function and limitation of Biostatistics
- Importance of statistical methods in Biology
- Classification: Meaning, Important characters and types
- Measure of Central Tendency
 - Meaning
 - Characters
 - Mean, Mode and Median
- Standard deviation

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SEMESTER-V

BOTANY PAPER-504

BOT: 504- PLANT PHYSIOLOGY AND BIOCHEMISTRY

UNIT-1

Plant Physiology-I

- Diffusion, Osmosis, Plasmolysis
- Absorption- Active and Passive
- Ascent of sap- Including theories
- Translocation- Upward, downward and lateral
- Photosynthesis
- Respiration

UNIT-2

Plant Physiology-II

- Growth
- Mineral nutrition
- Plant growth substance
 - **Growth promoter- Auxin, Gibberellins and Cytokinin**
 - **Growth retardant- ABA and Ethylene**

UNIT-3

Physiological instrument

- I. Isotop
- II. Colorimeter
- III. Spectrophotometer

- IV. Ultracentrifuge
- V. pH Meter
 - Chromatography

UNIT-4

Biochemistry

- pH and Buffer
- Solution and colloidal system
- Protoplasm as a colloidal system
- **Enzymes**
 - Definition, Classification, properties
 - Factor affecting rate of enzymatic activities and mechanism of enzyme action.
- **Amino acids**
- **Carbohydrate**

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SEMESTER-V

BOTANY PAPER-505

BOT: 505- ANATOMY AND EMBRYOLOGY

UNIT-1

Plant Anatomy-I

- Laticiferous tissues
 - Introduction, Latex cells- Structure and function
 - Articulated laticifers
- Root- stem transition
- Vascular cambium
 - General development and Structure of the vascular cambium
 - Types of cambium
 - Seasonal activity of cambium
- Nodal anatomy

UNIT-2

Plant Anatomy-II

- Periderm- Origin, Structure and Function
- Lenticell
- Leaf abscission
- Anomalous Secondary Growth
 - **Stem:-** Bouganvilliea, Mirabilis, Tinospora
 - **Root:-** Radish, Beet

UNIT-3

Embryology-I

- Megasporogenesis
- Types of embryo sacs
- **Monosporic (Polygonum- eight nucleated types)**
- **Bisporic (Allium-Eight nucleated types)**
- **Tetrasporic (Fritillaria- Eight nucleated types)**
- Fertilization (Double fertilization) and Significance of double fertilization
- Endosperm

UNIT-4

Embryology-I

- Embryo
- Embryogenesis in Dicot (Nicotiana)
- Embryogenesis in Monocot (Poa)
- Nutrition of embryo
- Poly embryo
 - Types (Factor for poly embryo),
 - Causes of poly embryo,
 - Experimental induction of poly embryo,
 - Classification of poly embryo
 - Practical value of poly embryo

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SEMESTER-V

BOTANY PAPER-506

BOT: 506- ELECTIVE PAPER

**ANGIOSPERM MORPHOLOGY, SYSTEMIC BOTANY AND
ENVIRONMENTAL ISSUES**

UNIT-1

Plant Morphology

- Leaf: Shape, margin, apex of lamina
- Calyx: Modification of Calyx
- Corolla: Form of corolla
- Seed
- Apiphyte, Parasite and Saprophyte

UNIT-2

Introduction of Plant Taxonomy

- History of Taxonomy
- Types of classification: Natural, Artificial and Phylogenetical
- Fundamentals of nomenclature
- Definition, need for nomenclature, common name and scientific name
- Binomial nomenclature and ICBN

UNIT-3

Angiosperm Families

- Taxonomical studies of the following families with references to their geographical distribution, systematic position, floral variations and economic importance.

- | | |
|---------------------|-------------------|
| I. Ranunculaceae | VIII. Acanthaceae |
| II. Annonaceae | IX. Polygonaceae |
| III. Menispermaceae | X. Loranthaceae |
| IV. Tiliaceae | XI. Musaceae |
| V. Vitaceae | XII. Poaceae |
| VI. Apiaceae | |
| VII. Sapotaceae | |

UNIT-4

Environmental Issue

- Global warming
- Greenhouse effects
- Ozon depletion
- Acid rain
- Environmental act: Environmental protection act, The air act, The water act, Wildlife protection act, forest conservation act
- Plant and pollution control

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SEMESTER-V

CAN SUBJECT : HORTICULTURE

Unit-1

Introduction of Horticulture

- Definition, Aims, Branches and importance of horticulture
- Propagation Methods
 - Cutting
 - Layering
 - Through Specialized structures (Corm, Rhizome, bulb, tuber, runner, sucker)
 - Budding,
 - Grafting

Unit-2

Preservation

- Definition, principles, different methods of preservation and storage of fruits and vegetables.
- Preparation of Jam, Jelly and Sauce.
- Causes of spoilage of fruits
- Role of Hormones in Horticulture

Unit-3

Cultivation of Fruit plants

- Cultivation of following fruit crops with reference to their origin, distribution, climate, soil, propagation, method of cultivation, harvesting and at least three varieties of each crop

- | | |
|-------------|------------|
| I. Mango | V. Coconut |
| II. Banana | VI. Lemon |
| III. Sapota | VII. Guava |
| IV. Papaya | |

Unit-4

Cultivation of Vegetable plants

- Cultivation of following vegetable crops with reference to their origin, distribution, climate, soil, propagation, method of cultivation, harvesting and at least three varieties of each crop

- | | |
|-------------------|-------------|
| I. Carrot | V. Cucumber |
| II. Potato | VI. Cabbage |
| III. Brinjal | VII. Methi |
| IV. Lady's finger | |

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SEMESTER-V

BOT PRA. XI : Algae, Fungi, Bryophyte & Plant Pathology

(A) ALGAE :

(1) *Rivularia* :

To study the thallus structure and heterocyst.

(2) *Tolypothrix* :

To study the thallus structure.

(3) *Volvox* :

To study the Volvox colony.

(4) *Chara* :

To study the specimen of Chara, T.S. of the main axis and Sex organs.

(5) *Sargassum* :

To study the plants of Sargassum, Anatomy of main axis, leaf and air bladder.

(6) *Polysiphonia* :

To study the thallus structure and cystocarp.

(To study the permanent slides of the above types.)

(B) FUNGI :

(1) *Albugo* :

To study vegetative structure.

(Permanent slide of Albugo conidia, Reproductive organs and Oospores.)

(2) *Pilobolus*:

To study vegetative structure.

(Permanent slide of *Pilobolus* WM, Reproductive organs)

(3) *Penicillium* :

To study the vegetative structure and Conidiophores.

(Permanent slide of *Penicillium* vegetative Conidiophores with conidia.)

(4) *Agaricus* :

To study the Basidiocarp.

(Permanent slide of T.S. of Stipe, T.S. of Pileus, Button stage v.s. of Agaricus.)

(C) BRYOPHYTA :

(1) *Marchentia*

To study the external morphology of *Marchentia* plant.

(Permanent slide of *Marchentia* veg., W.M. and L.S. of sporophyte.)

(2) *Porella* :

To study the external morphology of *Porella* plant.

(Permanent slide of *Porella* veg. W.M. and L.S. of sporophyte.)

(2) *Nothothylus* :

To study the external morphology of *Nothothylus* plant.

(Permanent slide of *Nothothylus* W.M. and L.S. of sporophyte.)

(3) *Sphagnum* :

To study the external morphology of *Sphagnum*.

(Permanent slide of *Sphagnum* W.M. and L.S. of sporophyte.)

(D) PLANT DISEASES :

Casual organism and Symptoms of following plant diseases.

- **Bacterial diseases**

- Wilt disease of potato
- Leaf spot of mango

- **Fungal diseases**

- Tikka disease of groundnut
- Wilt of cotton
- Powdery mildew of barley
- Blast disease of Rice

- **Viral diseases**

- Leaf curl of papaya
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SEMESTER-V

BOT PRA. XII : Plant Physiology, Biochemistry & Embryology

(A) PHYSIOLOGY :

Following physiological experiments are to be set up by the student.

(Requirements to be submitted by the students.)

- (1) To find out rate of photosynthesis by bubble counting method.
- (2) To find out effect of co₂ concentration on rate of Photosynthesis.
- (3) To find out effect of light intensity on the rate of Photosynthesis.
- (4) Experiments on enzyme action:
 - (i) Amylase (ii) Invertase.
- (5) To study the activity of enzyme Urease and the factors effecting the activity.
(Concentration and Time)
- (6) Estimation of total sugar and reducible sugar.
- (7) Separation of amino acids by paper chromatography.
- (8) Uses of colorimeter and PH meter.
- (9) Estimation of Amino acid by Colorimetric method.
- (10) Estimation of Phosphorus by Colorimetric method.
- (11) Estimation of Ethyl acetate.

(B) Following physiological experiments are for demonstration only.

- (1) Experiment to demonstrate the process of transpiration.
- (2) Demonstration of the stomatal transpiration by four leaves method.
- (3) To demonstrate that oxygen is used during respiration.
- (4) To measure the growth rate by lever auxanometer.
- (5) To demonstrate that separation of chloroplast pigments by thin layer Chromatography.

(C) PHYSIOLOGICAL INSTRUMENTS:

Study of physiological instruments:

- (i) Colorimeter (ii) Spectrometer
- (iii) ultracentrifuge (iv) pH meter.

(D) BIOCHEMISTRY:

- **Test for reducing sugar**
 - Fehling's test
 - Benedict's test
 - Barfoed's test
 - Trommer's test
 - Moore's test
- **Test for non- reducing sugar**
 - Fehling's test
 - Benedict's test
- **Test for Amino acid**
 - Ninhydrin test
 - Test for Tyrosine
 - Test for tryptophan
 - Test for Cysteine

(E) EMBRYOLOGY:

(1) Embryo mounting in any available dicot plant.

(2) Permanent slide of the following:

(a) EMBRYOLOGICAL STAGES:

- (i) T.S. of Anther Showing Four Mature Pollen Sacs
- (ii) T.S. of Mature Anther Showing Dehiscence
- (iii) Pollen Tetrads
- (iv) Pollinia
- (v) Germination of Pollengrain.

(b) Megasporangium:

- (i) Two celled stage of Megaspore Mother Cell
- (ii) Ovule with Binucleate Embryo-sac
- (iii) Ovule with 4-nucleate Embryo-sac
- (iv) Ovule with 8-nucleate Embryo-sac

(c) Embryo:

- (i) Globular embryo
- (ii) Heart-shaped embryo
- (iii) Mature embryo

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SEMESTER-V

BOT PRA. XIII : Angiosperm & Anatomy

(A) ANGIOSPERM:

(a) Leaf Shape:

- Linear : *Grasses*
- Lanceolate: *Nerium*
- Elliptical: *Guava*
- Ovate: *China rose*
- Obovate: leaflet of *Cassia obtusifolia*
- Oblong: *Banana*
- Reniform: *Centilla asiatica*
- Cordate: *Betel*
- Sagittate: *Sagittaria sagittifolia*

(b) Leaf margin:

- Entire: *Mango*
- Sinuate: *Polyalthia*
- Serrate: *China rose*
- Dentate: *Melon*
- Denticulate: *Coccinia cordifolia*
- Lobed: *Ranunculus*

(c) In taxonomic studies of angiosperms, plants available in the local area should be given.

- (i) Ranunculaceae
- (ii) Annonaceae
- (iii) Menispermaceae
- (iv) Tiliaceae
- (v) Vitaceae

- (vi) Apiaceae
- (vii) Sapotaceae
- (viii) Acanthaceae
- (ix) Polygonaceae
- (x) Loranthaceae
- Xi) Musaceae
- (xii) Poaceae

(B) ANATOMY :

- (1) T.S. of the following stem for anomalous secondary growth.
 - (i) *Bougainvillea*, (ii) *Mirabilis*, (iii) *Tinospora*.
 - Permanent slide: (i) *Bougainvillea* stem T.S. (ii) *Mirabilis* stem T.S.
 - (iii) *Tinospora* stem T.S.
- (2) T.S. of the following root for anomalous secondary growth.
 - (i) Beet (ii) Radish (iii) Carrot
 - Permanent slide: (i) Beet root T.S. (ii) Radish root T.S.
 - (iii) Carrot root T.S.
- (3) Preparation of permanent slide. (Safranin - Fast Green Combination)
- (4) To measure the dimensions of common microorganisms by calibration and standardization of microscope using stage micrometer and ocular micrometer.
- (5) Measurement of microscopic structure and sketching with camera lucida.
- (6) Permanent slide of the following :
 - (i) Laticiferous tissue
 - (ii) Periderm
 - (iii) Lenticell
 - (iv) Leaf fall
 - (v) Latex cell.
- (7) Preparation of slides for nodal anatomy.
 - (i) Unilacular
 - (ii) Trilocular.

X_____X_____X_____X_____X_____X_____X_____X_____X

T.Y.B.Sc.
SEMESTER VI
BOTANY

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SEMESTER-VI

BOTANY PAPER-601

BOT: 601- PTERIDOPHYTES AND PALEOBOTANY

UNIT-1

General introduction of Pteridophyte

- General character of pteridophytes
- Classification of pteridophytes according to G.M. Smith and Riemers
- General character of following classes
 - I. Psilophytosida
 - II. Psilotopsida
 - III. Lycopsidea
 - IV. Sphenopsida
 - V. Pteropsida
- Habit and Habitat, body structure, internal characters, Reproduction, Gamatophytic phase and Alternation of generation in pteridophytes

UNIT-2

Life History of Pteridophyte

Classification and life history of following types

- I. Lycopsidea- *Selagenella*
- II. Pteropsida- *Ophioglossum and Azolla*

UNIT-3

Paleobotany

- Introduction
- Fossilization and types of fossil
- Nomenclature of fossils
- Geological time table

UNIT-4

Life History of Pteridophyte

Classification and life history of the following types (Excluding development)

- I. **Psilophytopsida- *Rhynia***
- II. **Psilotopsida- *Psilotum***
- III. **Lycopsida- *Lepidodendron***
- IV. **Sphenopsida- *Sphenophyllum***

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SEMESTER-VI

BOTANY PAPER-602

**BOT: 602- GYMNOSPERM, FOSSIL GYMNOSPERM AND BOTANICAL
TECHNIQUES**

UNIT-1

Gymnosperm-I

- Introduction and General characters of
- Affinities of gymnosperm with pteridophytes and angiosperm
- Classification and importance characters of following orders

- | | |
|---------------------------|-----------------------|
| I. Cycadofilicales | V. Coniferales |
| II. Bennettitales | VI. Ginkgoales |
| III. Cycadales | VII. Gnetales |
| IV. Corditales | |

UNIT-2

Gymnosperm-II

- Classification and life histories of following types (Excluding development)

- I. Taxus***
- II. Ginkgo***
- III. Ephedra***

UNIT-3

Fossil Botany

General accounts of following types

- I. **Cycadofilicales- *Lyginopteris***
- II. **Cycadeoidales- *Cycadeoidea***
- III. **Corditales- *Cordaites***

UNIT-4

Botanical techniques

- **Herbarium techniques**
 - Introduction
 - Field and collection techniques
 - Function of herbaria
- **Micro techniques**
 - Fixative and fixation
 - Dehydration
 - Infiltration
 - Microtomy
 - Stains
- **Whole mount of minute object**
- **Camera lucida**

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SEMESTER-VI

BOTANY PAPER-603

BOT: 603- CELL BIOLOGY AND GENETICS

UNIT-1

Cell Biology-I

- Ultra structure and function of following organelles

- | | |
|--------------------------|---------------------------------------|
| I. Cell-wall | V. Lysosomes |
| II. Chromosomes | VI. ER (Endoplasmic reticulum) |
| III. Ribosome | VII. Nucleus |
| IV. Golgi complex | |

UNIT-2

Cell Biology-II

- Cell-cycle
- Mitosis
- Meiosis

UNIT-3

Genetics- I

- Nucleic acids
- Introduction
- Structure and types of DNA and RNA
- DNA- Replication
- Transformation and transduction

UNIT-4

Genetics-II

- Genetic code
- Mutation
- Lac-operan
- Chromosomal aberrations
- Protein synthesis (Transcription and translation)

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SEMESTER-VI

BOTANY PAPER-604

BOT: 604- PLANT ECOLOGY AND PHYTO-GEOGRAPHY

UNIT-1

Ecology

- Introduction, Definition and Brief account of ecological factor.
- Soil as an Edaphic factor
 - Composition of soil
 - Origin and development of soil
 - Soil moisture
 - Soil profile
- Biotic factor- Relationship among the organisms

UNIT-2

Plant community

- Definition, Characteristics and classification of plant community
- Characters of plant community (Analytical and Synthetical)
- Ecological niche
- Methods of studying vegetation
 - Quadrant
 - Transect

UNIT-3

Plant succession

- Definition and Causes of succession
- Process in succession
- Kinds of succession
- Rate of succession
- Limiting factors and trend in succession
- Hydrosere and xerosere

UNIT-4

Phyto-geography

- Forest vegetation of Gujarat
- Mangrove vegetation
- Desert of Gujarat
- Vegetation types of Himalaya
- Remote sensing
- Biological clock or Ecological clock

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SEMESTER-VI

BOTANY PAPER-605

BOT: 605- ECONOMIC BOTANY AND PHARMACOGNOSY

UNIT-1

Plants and their utilization

- Fibers
 - Introduction and classification of fibers
 - Plant fibers: Cotton, Jute and Coir
- Timber and firewood species
 - Definition and properties of wood
 - Types of wood
 - Uses of wood
- Distribution, botanical name, family and uses of following timber and firewood plants

<i>I. Accacia nilotica</i>	<i>V. Anogeissus letifolia</i>
<i>II. Azadirachta indica</i>	<i>VI. Dalbergia latifolia</i>
<i>III. Gemelina arborea</i>	<i>VII. Mitragyna pervifolia</i>
<i>IV. Tectona grandis</i>	<i>VIII. Terminalia chrnulata</i>

UNIT-2

Beverages and Beverage plants

- Classification of Beverage plants
- Origin, Botanical description, cultivation, preparation and uses of following beverage plants
 - **Non Alcoholic Beverages:- Tea, Coffee and Cocoa & Chocalate**
 - **Alcoholic Beverages:- Wine, Beer and Tadi**

UNIT-3

Introduction of Pharmacognocny

- Evaluation of drugs by following methods
 - Organoleptic evaluation

- Microscopic evaluation
- Biological evaluation
- Chemical evaluation
- Physical evaluation
- Classification of drugs
 - Classification of drug on the basis of Taxonomy
 - Classification of drug on the basis of Chemical present
 - Classification of drug on the basis of mode of action

UNIT-4

Plant drugs

- Drugs obtained from root: Cochicum
- Drugs obtained from bark: Holarrhena
- Drugs obtained from leaves: Adhatoda
- Drugs obtained from fruits: Dill (Sowa) and Poppy
- Drugs obtained from seeds: Nux vomica
- Underground drugs: Gum and Aloes

Medicinal Plants

- Scientific name, family, distribution, parts used and uses of following medicinal plants

I. Agele marmelos

II. Cassia tora

III. Trigonella foenum-graecum

IV. Andrographis peniculata

V. Aristolochia bracteolate

VI. Enicostema axillare

VII. Rauwolfia serpentine

VIII. Withania somnifera

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SEMESTER-VI

BOTANY PAPER-606

BOT: 606- ELECTIVE PAPER- TAXONOMY AND PALYNOLOGY

UNIT-1

Botanical garden

- Aims of Botanical garden
- Prerequisite of Botanical garden
- Various Botanical gardens of World and India
 - Royal Botanical Garden - Kew
 - New York Botanical Garden- New York
 - Indian Botanical Garden-Calcutta
 - Loyd Botanical Garden- Darjeeling

BSI (Botanical Survey of India)

- Introduction and main objectives of BSI

UNIT-2

Major system of classification of following Botanist and its merits and

demerits

- ▶ Angler and Prantl
- ▶ John Hutchinson
- ▶ Bessey

UNIT-3

Angiosperm Families

- Taxonomical studies of the following families with references to their geographical distribution, systematic position, floral variations and economic importance.

I. Papaveraceae	VII. Lythraceae	XII. (12)
II. Portulacaceae	VIII. Oliaceae	Hydrocheritacea
III. Rutaceae	IX. Boraginaceae	e
IV. Rhamnaceae	X. Basalaceae	XIII. (13)Orchidacea
V. Sepindaceae	XI. (11)Casuranace	e
VI. Anacardiaceae	ae	

UNIT-4

Palynology

- Introduction
- Pollen morphology
- Ancient applied aspects of palynology
- Importance of pollen: In food, In medicine, In agriculture and In breeding
- Pollen allergy: Diseases, allergens and control

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SEMESTER-VI

CAN SUBJECT : GARDENING

Unit-1

- **Soil :-** Definition, types, components and merits of soil analysis
- **Land scaping**
- **Garden:-** Definition and types of garden, Lawn, Kitchen garden

Unit-2

- **Plough:-** Definition, care taken during plough and merits
- **Manure:-** Organic manure, fertilizer, vermicompost
- **Irrigation:-** Definition, types and importance

Unit-3

- **Pruning:-** Definition, principles, aims, effect on growth and care taken during pruning
- **Framing:-** Definition, types and importance of framing
- **Fencing:-** Definition, types of fencing i.e thorny, wall, wire, wind breaker and importance of fencing

Unit-4

- **Flower arrangement:** Flower and flower arrangement, Importance of flower in home decoration, Types and principles of flower arrangement, Law of flower arrangement, Selection of flower vase, flower and place of arrangement
- **Cultivation of following flowering plants**
 - I. **Rose**
 - II. **Marigold**
 - III. **Gerbera**
 - IV. **Crinum**
 - V. **Chrysanthemum**