ARULMIGU PALANIANDAVAR ARTS COLLEGE FOR WOMEN
(Autonomous)
(Re-Accredited with 'A' Grade by NAAC)
(A Government Aided College - Affiliated to Mother Teresa Women's University, Kodaikanal)
CHINNAKALAYAMPUTHUR (PO), PALANI -624 615.

DEPARTMENT OF BOTANY

SYLLABUS

UNDER
CHOICE BASED CREDIT SYSTEM
2013 – 2017
TANSCHE

B.Sc, BOTANY MAJOR

OBJECTIVES :

1. To construct the syllabus according to TANSCHE semester Pattern &credit system.
2. To make the students excellent academically.
3. To inculcate in them a sense of spirit and curiosity towards research activities .
4. To remodel the syllabus in order to have inter –disciplinary approach .
5. To make them self confident and become an entrepreneur by acquiring knowledge about Mushroom Cultivation .
6. To improve their personal characters build up.
7. To make them to understand & admire the importance of healthy environment , natural flora and fauna.
8. To acquire the knowledge of horticultural plants to understand the Principles of plant propagation to identify useful techniques for propagating plants.
9. To be aware of the habit and habitatof Chemical constituents and uses of medicinal plants .
10. To provide the opportunities for placement in Nurseries & Food preservation units.

ELIGIBILITY FOR ADMISSION : Passed in +2 Examination and studied Botany , Zoology , Chemistry or Biology

DURATION OF THE COURSE : 3 years - 6 semesters

MEDIUM OF THE INSTRUCTION : English

SUBJECT OF STUDY : Annexure A

SCHEME OF EXAMINATION : Theory - Internal 40 External - 60
Practical – Internal - 40 External – 60

ELIGIBILITY OF DEGREE : Scoring 40% in part I,II,III, and IV

EVALUATION :
The break up internal assessment as follows :

Theory : Test = 30 Assignment /Quiz = 5 marks , seminar =5 marks

Practical :

Continuous Assesment = 20 marks

Model practical exam = 20marks

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C.K. Puthur, Palani. 624615.

COMMON STRUCTURE FOR UG- I – B.Sc, BOTANY

SEMESTER -I

	Title paper	Hours	Mark /Grade			Credits
			CIA	CE	Total	
1	Part – I Tamil Paper – I	6	40	60	100	3
	Part – I English Paper - I	6	40	60	100	3
	Part – III Core subjects					
	Paper I- Plant Diversity I	6	40	60	100	4
	Paper- II- Bacteriology and Plant Pathology	6	40.	60	100	4
	Allied : Theory paper -I	5	40	60	100	4
	Part - IV : VE					
	Value Education	1	40	60	100	3
	Total	30			600	21

SEMESTER - II

II	Part – I Tamil Paper – II	6	40	60	100	3
	Part – I English Paper - II	6	40	60	100	3
	Part – III Core subjects					
	Paper-IIIPlant Diversity II	6	40	60	100	4
	Paper - Major Practical Paper - I	5	40.	60	100	4
	Allied : Practical	5	40	60	100	4
	Part - IV : ES					
	Environmental science	2	40	60	100	2
	Total	30			600	20

SEMESTER - III

III	Part – I Tamil Paper – III	6	40	60	100	3
	Part – I English Paper - III	6	40	60	100	3
	Part – III Core subjects Paper.4Biochemistry, Biophysics and Biostatics	5	40 .	60	100	4
	Allied : Theory	5	40	60	100	4
	Elective : 1. Biometry and computer application	4	40	60	100	3
	Part - IV : NME Non Major Elective	2	40	60	100	2
	SBS : -I Mushroom for Livelihood	2	40	60	100	2
	Total	30			700	21

SEMESTER - IV

IV	Part – I Tamil Paper – IV	6	40	60	100	3
	Part – I English Paper - IV	6	40	60	100	3
	Part – III Core subjects Paper 5 cell biology,Reproductive Botany ,Plant Anatomy	4	40 .	60	100	4
	Major Practical Paper – II	4	40	60	100	4
	Allied : Practical	3	40	60	100	4
	Elective : II Horticulture and Landscaping	3	40	60	100	3
	Part – IV NME	2	40	60	100	2
	SBS - II Bio Fertilizers	2	40	60	100	2
	Total	30			800	25

SEMESTER - V

		Hours	Mark / Grade			Credits
			CIA	CE	Total	
V	Part - III Core Subjects Paper.VI - Morphology and Angiosperm Taxonomy	5	40	60	100	4
	Paper VII - Applied Microbiology	5	40	60	100	4
	Paper .VIII – Plant Bio Technology	5	40	60	100	4
	Paper IX - Commercial plant products	5	40	60	100	4
	Major practical paper - III	5	-	-	-	-
	Elective-III- Bio diversity conservation and management	3	40	60	100	3
	Project	2	40	60	100	2
	Total	30			600	21

SEMESTER - VI

		Hours	Mark / Grade			Credits
			CIA	CE	Total	
VI	Part - III Core Subjects					
	Paper X Plant Physiology	5	40	60	100	4
	Paper XI Classical and molecular genetics	5	40	60	100	4
	Paper XII – Habitat ecology	5	40	60	100	4
	Paper XIII -Medicinal Botany	5	40	60	100	4
	Elective –IV Herbal Cosmetics	5	40	60	100	4
	Major practical paper – III	-	40	60	100	4
	Major Practical paper - IV	3	40	60	100	3
	Part IV : SBS Food Preservation	2	40	60	100	2
	Part – V :EA Extension Activities				100	3
	Total	30			900	32

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TANSCHE COMMON STRUCTURE FOR UG

Semester	Title paper	Hours	Mark /Grade			Credits
			CIA	CE	Total	
1	Part – I Tamil Paper – I	6	40	60	100	3
	Part – I English Paper - I	6	40	60	100	3
	Part – III Core subjects					
	Paper I- Theory	6	40	60	100	4
	Paper - II Theory	6	40.	60	100	4
	Allied : Theory	5	40	60	100	4
	Part - IV : VE					
	Value Education	1	40	60	100	3
	Total	30			600	21
II	Part – I Tamil Paper – II	6	40	60	100	3
	Part – I English Paper - II	6	40	60	100	3
	Part – III Core subjects					
	Paper 3- Theory	6	40	60	100	4
	Paper 4- Practical	5	40.	60	100	4
	Allied : Practical	5	40	60	100	4
	Part - IV : ES					
	Environmental science	2	40	60	100	2
	Total	30			600	20
III	Part – I Tamil Paper – III	6	40	60	100	3
	Part – I English Paper - III	6	40	60	100	3
	Part – III Core subjects					
	Paper 5- Theory	5	40 .	60	100	4
	Allied : Theory	5	40	60	100	4
	Elective :	4	40	60	100	3
	Part - IV : NME Non Major Elective	2	40	60	100	2
	SBS :	2	40	60	100	2
	Total	30			700	21

IV	Part – I Tamil Paper – IV	6	40	60	100	3
	Part – I English Paper - IV	6	40	60	100	3
	Part – III Core subjects					
	Paper 6- Theory	4	40	60	100	4
	Paper 7 – Practical	4	.40	60	100	4
	Allied :					
	Practical	3	40	60	100	4
	Elective	3	40	60	100	3
	Part – IV NME	2	40	60	100	2
	SBS	2	40	60	100	2
	Total	30			800	25
V	Part - III Core Subjects					
	Paper 8 : Theory	5	40	60	100	4
	Paper 9 : Theory	5	40	60	100	4
	Paper 10 : Theory	5	40	60	100	4
	Paper 11 : Theory	5	40	60	100	4
	Paper 12 : Theory	5	40	60	100	4
	Elective	3	40	60	100	3
	Part IV : SBS	2	40	60	100	2
	Total	30			700	25
V	Part - III Core Subjects					
	Paper 13 : Theory	5	40	60	100	4
	Paper 14: Theory	5	40	60	100	4
	Paper 15 : Theory	5	40	60	100	4
	Paper 16 : Theory	5	40	60	100	4
	Paper 17 : Theory	5	40	60	100	4
	Elective	3	40	60	100	3
	Part IV : SBS	2	40	60	100	2
	Part – V :EA					
	Extension Activites				100	3
	Total	30			800	28

CORE SUBJECT

Number of Paper	**Credit for each Paper**	**Total credits**
Theory Paper 13	4 Credits	52
Practical Papers 4	4 Credits	16
Elective 4	3 Credits	12
Total		**70 Credits**

ALLIED BOTANY

Number of Paper	**Credit for each Paper**	**Total credits**
Theory Paper -1	4 Credits	4
Practical Paper -1	4 Credits	4
Total		**16 Credits**

ARUL MIGU PALANIANDAVAR ARTS COLLEGE FOR WOMEN, PALANI.

DEPARTMENT OF BOTANY

Core Papers – Allied Papers, Elective Papers and Skill Based Subjects

I. B.Sc,Botany -I-Semester

Major Paper -I Diversity of Algae and Bryophytes

Major Paper - II Diversity of Fungi, Lichens and Plant Pathology.

II –Semester

MajorPaper-III,Diversity of Pteridophytes , Gymnosperms and Palaeo botany

Major Practical Paper –I

Ancillary : Paper - I

Ancillary : Paper - II

III – B.Sc, Botany - VI-Semester

X - Plant Physiology

XI - Genetics and Molecular Biology

XII – Applied plant ecology

XIII –Forestry (or) Medicinal Botany

Elective Papers - Herbal Cosmetics

SBC - Food Preservation

NON -MAJOR ELECTIVE

III- Semester - Gardening and Nursery Management

IV- Semester - Herbal Therapeutics

Ancillary : Paper - I

Ancillary : Paper - II

DEPARTMENT OF BOTANY

COMMEN ACADEMIC STRUCTURE FOR BRANCH V- BOTANY

Revised syllabus to come into effect from the Academic year – 2013-2014

S.NO	Semester	Core Paper	Subject	Hours		Marks		Total	Credits
				Theory	Practical	Internal	External		
1	I	1	Diversity of Algae & Bryophytes						
2		2	Diversity of Fungi, Lichens and Plant Pathology						
3	II	3	Diversity of Pteridophytes,Gymnosperms and Palaeo Botany						
4			Practical Paper – I						
5	III	4	Biochemistry, Biophysics and Biostatics						
6	IV	5	Cell Biology, Reproductive and Botany, Plant Anatomy						

CORE SUBJECT

Number of Paper	Credit for each Paper	Total credits
Theory Paper 13 Practical Papers 4 Elective 4	4 Credits 4 Credits 3 Credits	52 16 12
Total		70 Credits

ALLIED BOTANY

Number of Paper	Credit for each Paper	Total credits
Theory Paper -1 Practical Paper -1	4 Credits 4 Credits	4 4
Total		**16 Credits**

QUESTION PATTERN

THEORY QUESTION PAPER MODEL

B.Sc, BOTANY MAJOR

Time : 3 Hours Maximum Marks 60

Section : A

I Answer all the Questions (10×1= 10)

All Objective type and multiple choice Questions should be answered .

Section : B

II - Answer any four Question out of six Questions ,4 Questions should be answered in paragraph not exceeding 1 ½ pages (4×5=20)

Section : C

III - Answer any Three of the following out of five Questions , three Questions should be answered in 3 pages (3×10=30)

INTERNAL VALUATION

INTERNAL MARKS : 40

Evaluation : 40 marks

Internal Test : 30 marks

Assignment : 5 marks

Seminar : 5 marks

QUESTION PATTERN FOR INTERNAL TEST

Section :A

I - Answer all the 5 Question (5 ×1=5)

Section : B

II- Answer three Questions out of five Questions (3×5=15)

Section : C

III – Answer only one Question out of two Questions (1×10=10)

To insist on Minimum pass in Internal Examination (IE) and External Examination (EE)

- *Distribution of Marks for Internal & External Examination is 40 and 60 Respectively*

COURES	*PASSING MARKS*		*ARREGATE PASSING MINIMUM*
UG	*16/40 (40%)*	*24/60(40%)*	*40/100*
PG	*20/40(50%)*	*30/60(50%)*	*50/100*

- *Internal Assessment –Test + Assignments , Seminars are permitted to write either in English or in Tamil as per their choice.*

- *Internal Marks should be handed over to the Controller of Examination of the University one week before the commencement of the Examination .*

Revision of Question Paper Pattern 2013 – 2017

COURES	*OBJECTIVE QUESTION*	*DETAILED ANSWWER QUESTIONS*
UG	*40%*	*60%*
PG	*30% PLUS 10% Logical Reasoning questions*	*60%*

Question Paper in External Examination carrying 60 Marks will be in the format below:

For both UG+PG

TYPE	*NO.OF QUESTION TO BR ANSWERD*	*MARKS*
OBJECTIVE	*24 Question to be Answered*	*24*
Paragraph about 3pages	*4Question each carrying 3marks all compulsory*	*12*
	3out 0f 5 Questions, each carrying 8Marks	*24*
Total		*60*

I- B.Sc, Botany , I – SEMESTER

PLANT DIVERSITY - I

Major Paper I **Credits : 4**
Hours : 6

Objectives :

1. To Learn about the cryptogamic plants .
2. To know the classification of Algae
3. To understand the diversity of Bryophytes complexity and the economic Value of lower plants .

Unit – I

General Characters of Algae -Range of thallus organization . General classification of Algae based on Fritsch system.

Economic importance of Algae .

Distribution , structure , reproduction and life history of following types of Algae. (Excluding development of sex organs

Cyanophyceae: Oscillatoria

Chlorophyceae : Oedogonium.

Unit – II

Distribution , Structure , reproduction and life history of following types of Algae (Excluding development of sex organs)

Phaeophyceae : Sargasam

Rhodphyceae : Polysiphonia

Unit –III

Brief account of General Characters of Fungi , Alexopoulos classification of Fungi

Economic importance of Fungi

Occillence, structure, reproduction and life cycle of the following types

Phycomycetes – Albugo

Basidiomycetes - Puceinia .

Unit –IV

Occurrence, Structure – Types and reproduction of Lichens – Ecology and Economic importance of Lichens – Life cycle of Usnea

Unit – V

General characters of Bryophytes . Brief account of Watson classification

Structure and reproduction of the following types:

Gametophytic and sporophytic characters of Bryopside - polytrichum

Reference Books :

1. Fritsch F.E – The structure and reproduction of the Algae vol I and II Vikas publications New Delhi.
2. Vashishta , B.R. Algae S. Chand and Co Ltd, New Delhi.
3. Chopra G.D - A text book of Algae S. Nagin & Co , New Delhi.
4. Singh R.N – Role of Blue green Algae Indian council of Agricultural Research New Delhi.
5. Parihar .N.S Introduction to Bryophyte vol ; I central Book Depot, Allahabad .
6. Pandey B.P , College Botany – Algae, Fungi and Bryophyte, Vol: I S. chand & co ,P.ltd. Ram Nagar, New Delhi.
7. Introduction to Bryophytes, Watson Himalayan Publication
8. Algae O.P.Sharma – 2011
9. Text Book of Algae O.P.Sharma -1986

I- B.Sc, Botany , I – SEMESTER

Paper – II BACTERIOLOGY AND PLANT PATHOLOGY

Credits - 4

Hours : 6

Objectives :

1. To know the structure of bacteria and to understand their role in the environment
2. To understand the classification of Bacteria
3. To Know the etiology of the plant diseases.

Unit : I

Classification of Bacteria Bergey's etal ,Nutritional types of Bacteria ,Morphology and Ultra structure of Bacteria

Unit : II

Bacteria Respiration Flagellation in Bacteria Gram staining in Bacteria

Unit : III

Economic importance of Bacteria Reproduction of Bacteria

Reproduction : Binary Fission , Sporulation, Budding ,Fragmentation,

Endospore Formation

Unit : IV

A Study of the following plant diseases with special reference to the symptoms, causal organism , diseases cycle and control measures – Viral disease :

Bunchy top of Banana

Unit : V

Bacterial diseases - Citrus canker, leaf spot of Mango

Fungal disease - Red rot of sugarcane Tikkadisease of ground nut .

I-YEAR - I- SEMESTER

DIVERSITY OF FUNGI , LICHENS AND PLANT PATHOLOGY

PLANT DIVERSITY - II

PAEPR - II

Objectives :

1.To enable thestudents to have a comprehensive knowledge of fungi, Lichenobgy & Plant pathology

2. To enable them to identify fungi causing plant diseases

3. To realize the economic value of these plants

Unit – I

Brief account of General characters of Fungi ,Alexopoulos classification of Fungi, Economic Importance of Fungi.

Unit –II

Occurrence, structure , reproduction and life cycle of the following types.

Phycomycetes - Albugo

Ascomycetes - Peziza

Unit – III

Basidiomycetes - Puccinia

Deuteromycetes - cercospora

Unit – IV

Lichens - General types, Ecology of Lichens, Economic Importance of Lichens, Ecology of Lichens Occurrence, structure and reproduction of usnea

Unit –V

A study of the following plant diseases with special reference to the symptoms, casual organism, disease cycle and control measures .

3.Fungal disease - Red rot of sugarcane

1. Viral disease - Bunchy Top of Banana 0opi;

2. Bacterial disease - Citrus canker

3.Fungal disease - Red rot of sugarcane

REFERENCE BOOKS :

1. Sharma .O.P 1989 text book of fungi tata MCGRAW – HILL Publishing company Ltd. New Delhi.

2. Alexopoulos C.J. and N.C. ,Bold –Algae and Fungi , The Macmillan co, Londen.

3. Gilber M.Smith- cryptoganic Botany vol: I Algae and fungi , New Delhi.

4. The Biology of Lichens - M. E . Hack

5. Lichen, Ahamed Geon.

6. Singh .R.S – Principles of plant pathology Oxford , IBH Publishing co , New Delhi.

I- B.Sc, Botany II - SEMESTER

MAJOR PAPER - III

PLANT DIVERSITY-II

Credits - 4

Hours : 6

Objectives :

1. To understand the classification of Pteridophytes and Gymnosperms.
2. To identify the various forms of Pteridophytes .
3. To differentiate various members of Gymnosperms.
4. To know the fossil forms.

Unit – I

General characters of Pteridophytes – Classification of Pteridophytes according to K.R. SPORNE stclar evolution . Homospory Heterospory , Apospory and Apogamy , Leptosporangiatre and Eusporangiate -Definitions only with examples.

External ,Internal Structure and reproduction(vegetative , Asexual, sexual) of the following types (excluding development of sex organs) Gametophyte and Sporophyte

PSILOTALES - PSILOTUM

LYCOPODIALES - LYCOPODIUM

Unit – II

External ,Internal Structure and reproduction(vegetative , Asexual, sexual)

Filicales - Gleichenia

Marsiliales - Marsilea

Unit- III

General Characters of Gymnosperms – Classification of gymnosperms according to sporne

Structure and reproduction of Pinus, (excluding developmental aspects need not be discussed) Morphology, Anatomy sex organs of pinus

Unit –IV

External ,Internal Structure and reproduction of Gnetum (excluding developmental aspects need not be discussed)

Unit –V

Geological Time scale , formation and types of fossils. Structure and reproduction of the following fossil types .

Psilophytales - Rhynia

Lepidodendrales - Lepidodendron

Books for Reference :

1. Sporne .K.R. 1974 , Morphology of Gymnosperms ,BT Publication , Chennai .

2. Sporne K.R. 1976, Morphology of Pteridophytes BT Publication ,Chennai.

3. Vashista P.C.1976 Gymnosperms , S. Chand .co , New Delhi.

4. Vashista P.C. 1976 Pteridophytes ,S.Chand .co , New Delhi.

5.Alan Reid Smith 1981, Pteridophytes California Academy of science 370 PPs

6. S.M Reddy ,S.J Chary 2003 Gymnosperms New age international (P) Ltd. New Delhi 452PP

BOTANY MAJOR PRACTICAL PAPER – I

I- B.Sc, BOTANY – II SEMESTER QUESTION PATTERN

PLANT DIVERSITY – I, II BACTIERIOLOGY AND PLANT PATHOLOGY

(Algae, Bryophytes , Fungi, Lichenology, Plant Pathology , Pteridophytes, Gymnosperms and Palaeobotany)

TIME : 3 HOURS MARKS : 60

1. Prepare suitable micropreparation of 'A' 'B' and 'C' stain and mount in glycerine Draw labelled sketches . Identify giving reasons, submit the slide for valuation (8×3=24)
2. Spot at sight (Genus and group only) D.E.F.G (4×2=8)
3. Comment on the Etiology of 'H' (3 marks)
4. Draw sketches and write critical notes on and identifying giving reasons ,I.J.K.L and M (5×3=15)
5. Comment on 'N' (3marks)
6. Observation note Book (10marks)

I- B.Sc, BOTANY- MAJOR PRACTICAL PAPER – 1

KEY AND SCHEME OF VALUATION

1. Algae, Bryophytes, Pteridophytes, and Gymnosperm material to given in A, B, and C
   A, Algae, B, Pteridophytes, C, Gymnosperms

   Slide submission - 2marks,
   Identification - 1 mark
   Diagram – 1 mark
   Reasons – 2 mark 3×6=18

2. D – Plant pathology specimen prescribed in the syllabus

   Identification - 1 marks
   Causal organism – 1 marks
   Diagram – 2 marks
   Two symptoms – 2 marks 6 marks

3. Macroscopic specimens prescribed in the syllabus E,F,G and H
   Genus – 1 marks
   Group - 1 marks 4×2=8

4, Write critical notes on I,J,K,L and M, Cryptogramic Slides and Bacteriology Photographs / charts

I, Algae , J, Fungi K.Bryophyte L, Pteridophyte and M,Gymnosperms

Identification - 1 Diagram - 1 Notes – 1 5×3=15

5, N. Fossil Slide

Identification - 1 Diagram – 1 Notes - 1 3marks

6, Observation Note Book (10) 10marks

II- B.Sc, BOTANY, III- SEMESTER

PAPER – IV, BIO CHEMISTRY ,BIO PHYSICS AND BIOSTATISTICS

credits : 4

Hours : 6

Objectives :

1. To introduce to the students , the structure and properties of various bio molecules
2. To learn the various concepts involved in the mechanism of e4nzyme action .
3. To have a clean – cut picture about the various statistical principles that can be used in their higher studies .

BIOCHEMISTRY

Unit- I

Basic concepts of Biochemistry – Brief account of atoms, Bonds – Ionic, hydrogen, Co-valent and co-ordinate. pH and Buffer , structure and properties of water.

Unit –II

Bio molecules – structure , classification and properties of carbohydrates , structure and properties of Monosaccharides- Glucose, Disaccharides – Sucrose, Polysaccharides – starch Protein -Primary ,secondary , Tertiary structure and Properties.

Lipids – classification and Properties, structure of fatty acid .

Unit –III

Enzymes - structure , Properties, Nomenclature and classification, Mechanism of Enzyme action , Factors affecting enzyme action .

A. BIOPHYSICS AND BIOTECHNIQUES

Unit – IV

Laws of Thermodynamics, concept of free energy, Redox potential, ATP as high energy compound ,.Fluorescence, Phosphorescence and Bioluminescence

Chromatography – principles and application , pH meter –principle and applications, calorimeter – principle and applications, centrifuge – principle and applications

Unit V BIO STATISTICS

Definition , Concept Characteristics Collection & Presentation of data measures of ‘ central Tendency – mean, median mode

Probability with simple problems

Measures of deviation - standard deviation

Measures of significance - chisquare test

Reference Books :

1. Lea.P.J. and Leegood ,R.C 2001 plant Biochemistry and molecular biology John Wileyand sons Ltd. England.

2. Jain J.L 1999 Fundamentals of Biochemistry S. Chand &co Ltd. New Delhi.

3. Gupta S.P statistical methods ,9th Ed Sultan Chand and sons Publishers , New Delhi. s

4. Johanson , Microtechniques power cell Biology s

5. Carey EJ Biophysics –affiliated East west press P.Ltd. New Delhi.

6. Fuller etal Biophysics – concepts and Mechanics

7. Jeyaraman U. Techniques in Biology – A College level study – Higgin Bathams Chennai.

8. Jeyaraman U. Laboratory manual in Biochemistry , wiley Easter Ltd. Chennai. s

9. Asokan V. Melvisharam – Biochemistry and Biotechniques.

BOOKS FOR REFERNCE

1. Biostatistics, A Guide & Design, Analysis & Discovery
Ronald N. Forthofer, Eurusul Lex ,Michael Hernandez

2. Topics in Biostatistics Waller T. Ambraisius

3. Instant Medicinal Biostatistics Ranjan Das , Papri N Das.

4. Fundamentals of Biostatistics Veer Bala Rastogi

II - B.Sc , Botany IV– SEMESTER

ELECTIVE PAPER - II

HORTICULTURE AND LANDSCAPING

Hours : 3

Credits : 3

Marks : 60

Objectives :

1. To understand the techniques of vegetative propagation
2. To study the cultivation of flowers and vegetables
3. To acquire the Knowledge of Landscape Designs

Unit : I

Scope and divisions of Horticulture – Botanical gardens of the World , Botanical gardens of India .Orchard –Lay out of Orchards and Orchard Cultivation ,.

Unit : II

A Brief account of methods of vegetative propagation. Important organic manures and chemical fertilizers .system of irrigation -Surface irrigation and over head system of irrigation

Unit : III

Production technology – cultivation of vegetables – Brinjal, cultivation of fruits – Mango, Effect of growth regulators in Horticulture . Kitchen garden – Lay out and cropping pattern

Unit : IV

Cultivation of flowers – Cultivation of Rose and cultivation of Jasmine, Isolation and Preparation of Attar . Indoor gardening – Hanging pots Bonsai , Rockeries-management of Rockeries .

Unit :V

Landscaping –Basic principles of Landscape design components of landscape-Residential landscaping , Public building and industrial areas.

Lawn making – Grasses -useful for Lawns

II- YEAR , III –SEMESTER

SKILL BASED SUBJECTS MUSHROOM FOR LIVELIHOOD

credits : 2

hours : 2

Objectives :

1. To understand the mushroom cultivation technique
2. To understand the importance of mushrooms as food

Unit : I

Introduction - Morphology , Type of Mushroom , Identification of edible and poisionous mushrooms, scope of Mushroom cultivation .

Unit : II

Nutritive value of common edible mushrooms life cycle of Agaricus and bisporous

Unit :III

Cultivation Methods - Compost – Preparation spawn production -spawn running, mulching, Harvesting

Unit : IV

Diseases – Organisms and Protective measures - Post harvest technology – Freezing , Dry Freezing , Drying , Packaging .

Unit : V

Mushroom recipies, value added products marketing of mushrooms.

Reference Books :

1. Nita Bahl 1996 Hand book on Mushrooms oxford and IBH Publishing Co Ltd.

2. Kapoor ,JN 1989 Mushroom Cultivation ICAR New Delhi-12

3. Aneja K.R 1993 Experiments in Microbiology, Plant Pathology , Tissue culture and Mushroom Cultivation Wishwa Prakasan, New Age International Ltd -New Delhi.

II- YEAR , IV - SEMESTER

PAPER – V , CELL BIOLOGY,ANATOMY AND EMBRYOLOGY

Objectives : credits : 4

Hours : 5

1. To study the ultrastructure of plant cell and organelles .

2. To know about the internal structure and organization of the various parts of the plants –stem , root and leaves.

3. To understand the changes leading to the development of embryo in dicots and monocots .

Unit – I

A brief account on structure and function of Mitochonodria and chloroplast cell division - Mitosis and Meiosis.

Unit – II

Ultrastructure of the plant cell, structure and function of Golgi body, ribosomes Nucleus and structure of chromosomes.

Unit – III

A Very brief account of permanent tissues (Parenchyma, Collenchyma and Sclerenchyma, xylem and phloem Meritems types, Structure and functions of Meristems Primary structure of monocot root and stem. Dicot stem and Dicot root Normal Secondary thickening in dicot stem and dicot root .

Unit – IV

Anomalous Secondary thickening in Boerhaavia and Dracaena, cell wall -Primary, Secondary Structure, Ultra Structure and Composition.

Unit – V

Structure of Microsporangium anther Microsporogenesis and Development of male gametophyte .

Structure of Megasporangium Ovule Structure and development of female gametophyte and polygonum

Double fertilization and triple fusion

Endosperm types-Cellular, Nuclear and Helobial, Ruminate -Only definitions with examples

Monocot embryo –Luzula

Dicot embryo – Capsella

Polyembryony, Apomixis , Parthenocarpy - only definition with examples

II- YEAR, IV – SEMESTER

SBC PAPER – II, BIO – FERTILIZERS

Unit – I

Biofertilizers – scope , Importance and need. Symbiotic bacterial inoculants Rhizobium, isolation, packing and storage, Field applications of Inoculants and crop Response

Unit – II

Non-Symbioticbacterial inoculants-Azotobacter- isolation – field application of Inoculants – crop Response . Azospirillum - isolation - field application and crop Response

Unit – III

Blue green algal inoculants – isolation , storage - field applications and crop response Azolla – A green manure cum biofertilizer – Mass cultivation, field application and uses .

Unit – IV

Vesicular and Arbuscular Mycorrhizae-Mass cultivation of Vam Fungi Isolation and Importance field applications

Unit – V

Mycorrhizae – mass multiplication-Role of mycorrhizae in agriculture as organic manures and Green manures .

III- B.Sc, BOTANY, V Semester

BIO DIVERSITY,CONSERVATION AND MANAGEMENT

Elective Paper -III

Objectives :

1. To understand the different forms of plant diversity and its Importance
2. To Study about the Conservation technologies
3. To Study the needs & methods of managements

Unit : I

Types of Biodiversity Concept and value of plant – Diversity, consumptive , productive, social ethical , and asthe tic values- Importance of plant Diversity

Unit : II

Centres of plant diversity in India , ethno botanical survey,IUCN-categories endangered and endemic plant species – Major plant species in Red –Data Book . IUCN

Unit : III

Major Threats climatic , Edaphic, Topographic & Natural calamities

Unit : IV

Conservation of plant diversity –principles Types- In situ and Ex .situ conservation .

Unit :V

In situ :- National Parks , Botanical gardens. India

Ex situ :- Plant tissue culture –germ plasm storage , cryopreservation – (gene Bank) Needs /methods of plant management – Forest production act /Bio diversity act

II- B.Sc, Botany IV - SEMESTER

Botany Major Practical -Paper II

(Biochemistry ,Biophysics , Biostatistics , cell Biology , Embryology and plant Anatomy)

Credits : 4

Hours : 4

Time : 3 hours Marks: 60

1. Taking lots from the set of experiments write the procedure proceed with the experiment, tabulate and interpret the results (14Marks)

2. Prepare transverse section of 'A'and 'B' stain and mount in Glycerine . Draw labeled sketches . Identify given reasons . Submit the slide for valuation (2×8=16)

3. Make suitable micropreparations of 'C' Identify atleast any one stage and show it to the examiner for valuation (4 Marks)

4. Dissect and take out the embryo from the material 'D' mount and submit it for valuation. (4Marks)

5. Solve the given statistics problem 4marks

6 Write critical notes on E F G H and I (5×2=10)

7 . Observation Note book (10 Marks)

Reference Books :

1. Verma .P.S. & V.K. Agarwal – cytology S. chand & co New Delhi.

2. Burke J.D, Cell Biology , Scientific book Agency, Calcutta .

3. Wilson G.B & H.Harrison – cytology - East west press ,Ltd. New Delhi .

4. Fried felgr and David, Cell and Biology .

5. Govinda Prakash Sharma , Reproductive Botany .

6. Bhogwani S.S & S.P Bhatnagal – The embryology of Angiosperms, Vikash Publishing House P.Ltd. , New Delhi .s

7. Katherine ,Esau Plant Anatomy ,wile Eastern Pvt.Ltd, New Delhi.

8. Vashista P.C plant Anatomy S. Nagind co ,New Delhi.

9. Arthur J. Eames and Lawrence- H.mac, Daniel : An Introduction to plant Anatomy , Tata MC.Graw Hill Publishing company Ltd. New Delhi.

II- YEAR - THIRD, SEMESTER PAPER - IV
BIOCHEMISTRY, BIO-PHYSICS, BIO- STATISTICS

Objectives :

1. To introduce to the students , the structure and properties of various bio molecules
2. To learn the various concepts involved in the mechanism of e4nzyme action .
3. To have a clean – cut picture about the various statistical principles that can be used in their higher studies .

Reference Books :

1. Lea.P.J. and Leegood ,R.C 2001 plant Biochemistry and molecular biology John Wileyand sons Ltd. England.
2. Jain J.L 1999 Fundamentals of Biochemistry S. Chand &co Ltd. New Delhi.
3. Gupta S.P statistical methods ,9th Ed Sultan Chand and sons Publishers , New Delhi. s
4. Johanson , Microtechniques power cell Biology s
5. Carey EJ Biophysics –affiliated East west press P.Ltd. New Delhi.
6. Fuller etal Biophysics – concepts and Mechanics
7. Jeyaraman U. Techniques in Biology – A College level study – Higgin Bathams Chennai.
8. Jeyaraman U. Laboratory manual in Biochemistry , wiley Easter Ltd. Chennai. s
9. Asokan V. Melvisharam – Biochemistry and Biotechniques.

PRACTICAL PAPER – II - IV- SEMESTER

II- B.Sc, BOTANY

Plant Anatomy, Cell Biology, Embryology, Biochemistry, Biophysics, & Bio-statistics.

PLANT ANATOMY

1. To make suitable micro preparations of the angiospermic materials – Dicot and monocot stem, root and leaves.

CELL BIOLOGY

1. To smear root tip and identify different stages of mitosis .
2. To smear young anther and identify different stages in meiosis.
3. To identify cell inclusions

EMBRYOLOGY

1. To mount embryo (Tridax, Brassica)
2. To study and write critical notes on permanent preparation showing development of anther Embryosac and embryo .

BIO CHEMISTRY

1. Qualitative test for carbohydrates, Proteins, and fats.
2. Measurement of the pH of soil solutions
3. Preparation of starch in plant tissue –Gravimetric and calorimetric

BIO STATISTICS:

1. Simple problems in probability
2. Frequency Distribution

III- B.Sc,BOTANY

V- SEMESTER MAJOR PAPER - VII

MICRO BIOLOGY

Credits : 4
Hours : 5

Objectives :

1. To understand the basic concepts of microbiology .
2. To Know the structure of bacteria and virus and to understand their role in the environment .
3. To acquire knowledge on the application of microbiology .
4. To understand the uses of industrial microbiology
5. To study the importance of soil microbiology of drinking water
6. To know about the human immune system.

unit - I

Introduction to microbiology Definition and scope of microbiology Viruses- General characteristics structure and multiplication of TMV and Bactriophage Transmission of viruses , symptoms and control Rabies and AIDS

unit –II

Food microbiology – microbial flora of food – Food poisoning and food Infection Industrial manufacture of Ethanol Antibiotics – Penicillin, Vitamin B12 , Aminoacids , Glutamic acid Production of SCP Industrial Effluent.

unit-III

Soil microbiology – soil micro –organism the Rhizophere micro organisms – Organic matter decomposition Humans functions of Humans. microbial degradation of Cellulose.

Unit- IV

Microbiology of domestic water - Microbiologyof drinking water **,**municipal water and sewage water - Brief account sewage treatment process . Determination of sanitary quality . Chemotherapy and control of micro – organisms through antibiotics

Unit –V

Immunology - Basic principle of Immunology structure of antigen and antibody and their reaction . Types of Immunology –Antigen ,Antibody –Definition , types Ag-Ab reaction . Types of Immunosystem Human Immune system . Immunization schedule (WHO)

III - YEARV-SEMESTER

PAPER – VIII - PLANT BIOTECHNOLOGY

Credits :4

Hours : 5

Objectives :

To enlighten the students on the basic principles of the biotechnological innovations.

To understand the fundamental of DNA technology

To understand the role of vectors in recombinant DNA technology

To know the application of tissue culture in crop improvement

To Learn the application of plant Biotechnology.

Unit – I

Biotechnology –Definition, scope and importance of Biotechnology gene transfer in plants. Electroporation and micro-injection vector mediated gene Transfer PCR –Principle, Technique Application and uses DNA finger printing techniques in Biotechnology

Unit –II

Recombinant DNA technology vectors,cosmid, transposans – Definitions Agrobacterium and genetic engineering in plant –Ti plasmids - Incorporation of TDNA into nuclear DNA Human health care (a) . Insulin (b). Human growth hormone (c). Antibiotics (d). vaccines

Unit – III

Plant tissue culture – Culture techniques types of medium Regeneration of plants Root culture , Meristem culture, Anther culture, Role of tissue culture technology in crop improvements . Artificial seeds .

Unit – IV

Transgenic plants -Definition Transgenic plants for herbicide, pest, fungi, and viral resistance . Biological control of pathogens & weeds through genetically engineered microbes - B, Thuringiensis

Unit – VPlant Biomass -Definition composition of biomass Biomass energy conversion , Bioenergy - Biofuels, Biodiesel and Biobutanol, Role of genetically recombinant microbes in pollution control – Pseudomonas .Intellectual property Rights

III – B.Sc, BOTANY, V – SEMESTER

Major paper IX – Commercial Plant Products

Credits : 4

Hours :5

Objectives :

1.To identify and explore the commercially important plant products .

2. To study the extraction methods of some commercial plant products.

Unit : I

Importance of economically important plant products – A brief Introduction about the food grains any two, pulses any two,spices any two, woods any two,

Unit : II

Economically important plant products – wood, rubber any two drugs coir industry – Agave and Banana oil industry – sunflower oil

Unit : III

Processing of Coffee powder –Type of Coffee – grading of coffee

Unit : IV

Sugar Industry - Extraction of sugar from sugarcane

Unit : V

Paper Making Industry - Preparation of pulp – Type of Paper Making of Paper.

SBS III- B.Sc, BOTANY, V- SEMESTER

DIETARY AND NUTRITIONAL VALUE OF FRIUTS AND VEGETABLES

OBJECTIVES :

1. To understand the Importance of human balanced diet for good human health .
2. To understand the nutritive values of fruits and vegetables .

Unit : I

Importance of balanced diet Food groups and nutritive value of foods.

Unit : II

Function of foods – physiological psychological and social functions .

Unit : III

Nutritional classification of foods – Energy yielding crops ,Body building crops and protective foods

Unit : IV

Fruits /Vegetables issued as the diet for Diabetes, fever , hyper tension, Hormonal Imbalance – arthritis and obesity Immunity enhancements

Unit : V

Allergic foods – Remedial crops for deficiency diseases and Allergic Symptoms

Reference Books

1. Swaminathan .M 1978- Advanced text Book on Food & Nutrition –vol :II
   II Edition The Bangalore printing and publishing co Ltd. Bangalore.
2. Wilson E.D Fischer .K.H & Fuqua M.E 1971 Principles of Nutrition
   II- Edition - Wiley eastern Pvt Ltd.
3. Sri Lakshmi .B 2006 Dietetics New Age International (P) Ltd. Publishers New Delhi.

III - YEAR V-SEMESTER

PRACTICAL PAPER – III

MORPHOOGY, TAXONOMY, OF ANGIOSPERMS COMMERCIAL PLANT PRODUCTS, APPLIED BIOTECHNOLOGY MICROBIOLOGY AND IMMUNOLOGY

Morphology :

1. To explain with reasons and illustrations, the morphological peculiarities of plant parts.

Taxonomy :

2. To refer angiospermic plants to their respective families giving reasons .
3. To Describe the plant in technical terms, drown labeled diagrams of the floral parts including the longituclinal section of the flower, construct the floral diagram and give the floral formula .
4. To identify at sight the angiospermic specimen from the local floral or from the herbarium collected during the filed study .
5. To attend a filed work under supervision for a minimum period of three days to acquaint with the flora of the same and submission of herbarium .
6. To identify the commercial products specified from the families prescribed in the syllabus and point out the botanical name, family and Morphology of the useful parts and their uses.

Microbiology

7. Sterilization techniques
8. Isolation and identification of microorganisms in soil, milk and drinking water – Hanging drop method – streak method .
9. To maintain an observation note and to submit it for external valuation

Applied Plant Biotechnology

10. P.C.R technique , Meristem Anther culture vector / Plasmid Ti plasmid Octopine /Napalin . Bacillus –Biopesticde Biofuels – Biodiesel Immunoglobulin /G IgGs

III- YEAR , VI - SEMESTER

PRACTICAL PAPER - III

Morphology, Taxonomy of Angiosperms, commercial plant products, Applied Biotechnology, Microbiology and Immunology.

Time : 3 , hours Max :60. Marks

1. Refer specimen A and B to their respective Families giving reasons. Sketches not required (2×4=8)
2. Describe specimen C in technical terms.
   Draw labelled sketches of the Floral parts only including the median longitudinal section of the Floral diagram and write the Floral diagram and write the Floral formula. (6 marks)
3. spot at sight (Genus and Family) D E F and G (4×1=4)
4. Write down the botanical name, Family Morphology of the useful parts and uses of the commercially important parts of H.I and J (3×2=6)
5. Prepare the bacterial smear using gram staining from the given cell suspension L (2 Marks)
6. Demonstrate the inoculation of microbes streak method / hanging drop method From the given cell suspension L
7. Write notes on morphology interest M.N.O (3×2=6)
8. Comment on P& Q picture/ photograph of Biotechnological interest .
9. Submission of Herbarium - 20 sheets (10 marks)
10. Observation Note Book (10 marks)

ANCILLARY BOTANY PRACTICAL

KEY AND SCHEME OF VALUATION

1, A- Angiosperm material (Root or stem) 6 marks

Section - 2, Sketch – 1, Identification – 1 , Reasons – 2

2, B- Pteridophyte or Gymnosperm specimen - 6 marks

Section – 2 , Sketch – 1, Identification – 1, Reasons – 2

3, C- Family identification - plants prescribed in the syllabus 5- marks

Identification – 1, Description – 3, Taxonomic position - 1

4, D- Technical term Description 6 marks

Diagram – 2, Description – 2

Floral Formulae- 1 , Floral Diagram – 1

5, Plant pathology specimen 4 marks

Identification – 1, Etiology- 2 Diagram – 1

6, Physiology set up 5 marks

Identification – 1 Sketch – 1 , Notes - 3

7,Algae , Fungi, Bryophytes, Pteridophytes, or Gymnosperms, Embryology, Anatomy- Slides or Specimens, 6×3=18

Identification – 1, Notes- 1, Diagram – 1

8, Specimens of Morphology and ecological interest 3 marks

Identification – 1, Diagram – 1, Notes – 1

9, Observation Note Book (10 marks)

III- YEAR,,VI – SEMESTER

PAPER – X PLANT PHYSIOLOGY

Objectives :

To make the students to realize the importance of all physiological processes that takes place in plants

To understand the mechanism of Cellular functions

Unit – I

Water relations in plants: Absorption of water

Imbibition, Diffusion, osmosis plants cell as osmotic system.

Plasmolysis – definition

Ascent of sap – Mechanism of Ascent of sap – A brief account of vital force theory, root pressure theory and Dixon cohesion theory

Water Loss :

Transpiration - Definition types Mechanism of Stomatal movement Significance of Transpiration – Guttation

Unit – II

Mineral Nutrition :

Mechanism of absorption of minerals -Passive and active absorption Passive – Donon Equilibrium Ion Exchange - Active absorption - carrier concept

Photosynthesis :

Mechanism Concept of Photosynthesis Recent views on light dark reaction. Photosynthesis unit Emerson effect. Red drop effect and Emerson Enhancement effect - hill reaction Two pigment system Photosynthesis – Electron transport system- Photophosphorylation - Cyclic and Noncyclic Photophosphorylation . Z – scheme of Photosynthesis Dark reaction carbon fixation -C3 and C4 pathways krantz anatomy – CAM pathway photorespiration

Unit – III

Respiration : Mechanism of Respiration : Glycolysis and krebs cycle. Electron Transport system and oxidative phosphorylation and TCA cycle Terminal oxidation fermentation and anaerobic respiration

Unit – IV

Nitrogen Metabolism :

Sources of Nitrogen Biological -N2 fixation - asymbiotic and symbiotic assimilation . Nitrate reduction Protein synthesizing machinery in plants.

Unit - V

Physiology of flowering photoperiodium & vernalization – Role of phytochromes

Circadian Rhythms – Biological Clack

III- B.Sc, BOTANY VI – SEMESTER

MAJOR PAPER - XI

CLASSICAL MOLICULAR BIOLOGY

Credits :4

Hours : 5

Objectives :

To acquire some knowledge of Classical genetics

To understand and apply the various concept involved in genetics

To understand the recent molecular aspects

To study the recent concept of Genetics

Unit- I

Mendelian inheritance – mendels laws of heredity with reference to monohybrid cross and Dihybrid cross

Modification of 3:1 phenotypic ratio due to incomplete dominance and Lethal gene action

Introduction of genes a). Dominate epistasis 12:3 :1 ratio , b). Recessive epistasis 9:3:1 ratio , c). Complementary genes [Duplicate recessive genes] 9:7 ratio

Unit – II

Multiple alleles with reference to ABO Blood groups

Polegenic inheritance -ear size in corn Linkage and crossing over with examples. Theories explaining the mechanism of crossing over .Factors influencing over Linkage and crossing over Significance of cross over Chromosome theory of inheritance

Unit – III

Mechanism of sex determination in plants Extra chromosomal inheritance in plants male sterility in Maize.Plastid Inheritance in plants Application of Mutation and polyploidy crop improvement

Unit – IV

Molecular Biology :

DNA Structure and types of replication Mechanism of replication of DNA RNA – Structure, types and functions Genetic code and its features Bacterial Genetics – Transformation Transduction and conjugation

Unit – V

Gene regulation - Operon concept with reference to Lac operon. Induction and Repression Modern concept of gene -one gene one enzyme hypothesis.

III- B.Sc, BOTANY VI- SEMESTER

PAPER – XIII HABITAT ECOLOGY

Credits : 5

Hours : 4

Objectives :

To make the students to realize the importance of all physiological processes that takes place in plants .

To understand the mechanism of cellular functions

Unit : I

Imbibition ,diffusion, Osmosis and plasmolysis – only definitions Ascent of sap- mechanism of Ascent of sap – A brief account of vital fore theory root pressure theory and Dixon cohesion theory

Water loss: Transpiration - Definition and types . Mechanism of stomatal movement, significance of transpiration Guttation

Unit : II

Mineral Nutrition – Micronutrients and Macronutrients Definitions , Deficiency

Photosynthesis- Concept of photosynthesis Recent viewson light reaction . Photosynthetic unit Emerson effect . Red drop effect and Emerson enhancement . Hills reaction . Electron transport system . Photophosphorylation – cyclic & Non cyclic Dark reaction and carbon fixation

Unit : III

Respiration - Mechanism of Respiration : Glycolysis and krebs cycle- Electron transport system and oxidative phosphorylation and TCA cycle – Terminal oxidation . Fermentation and anaerobic respiration

Unit : IV

Nitrogen Metabolism : sources of Nitrogen , Biological v2 fixation – asgmbiotic and symbiotic assimilation Nitrate reduction . Protein Synthesizing machinery in plants .

Unit : V

Physiology of flowering , Photoperiodium & Vernalization Role of phytochromes Corcadian rhythms – Biological clock

MEDICINAL BOTANY

Objectives :

1. To realize the Values of traditional medicine
2. To understand the importance of Herbal medicine
3. To acquire knowledge on the Herbal remedies .

Unit : I

Introduction to traditional system of medicine – codified stream-siddha – Ayurveda-Homaeopathi and Unani- Scope of Herbal medicine – Technical terms used in medicinal Botany .

Unit : II

Herbals for Liver diseases Phyllanthus amarus , Tephrosia – purpurea

Herbals for Cardio vascular system , Rauwolfia serpentiana

Diagilalis, purpurea

Unit : III

Herbals for central nervous system coffie Arabica

1. withaniama somnifera 2. Cardiospermum halicacabum

Herbals for Cancer 1. Vinca rosea 2. Gloriosa superba

Unit : IV

Herbals for kidney disease

1. Aerva lanata 2. Tribulus terrestris

Unit : V

Brief study about cultivation , constituents and uses of the following :

1. Melia azadirach
2. Piperr Niqrum

Reference Books :

1. Text book of Pharmacognosy – TE. Walls Fifth Edition – Publication – CBS publication and Distribution , Delhi.

2. Pharmacognosy – SS. Handa and V.K. Kapoor, Second Edition, publication Vattubh Prakasan , Delhi.

3. Pharmacognosy – C.K. Kokate, a.p.durohit and S.R. Gokhale twelth edition – publication nirali prakasan , pune.

4. Pharmacognosy – and Pharmacotherapeuties Vol ;I & II R.S . Satoskar and S.D. Bhandarkar Thirteenth Edition – Revised publishers – Popular Prakasan, Bombay.

5. Yoga Narashimhan ,S.N. 2000 – Medicinal plants of India Vol: II

II- B.Sc, BOTANY , III – SEMESTER

ELECTIVE PAPER – I, BIOMETRY AND COMPUTER AND BASIC BIOCUFORMATICS

OBJECTIVES :

1. To Understand the Various modern techniques
2. To apply the principles of instrumentation in research
3. To learn about the basics of computer and internet
4. To understand the role of computer in biological research

Unit : I

Microscopy – principles applications of microscopy – compound microscopy , Election microscope

Unit : II

PH. meter – working principles, applications centrifugation – principles and application

Unit : III

Colorimeter – Beer- Lamberts Law' – application Chromatography

paper chromatography – principles and application paper chromatography

Unit : IV

Computer Introduction - Input / Out put Devices – Storage memory

Unit V

MS Office, Word Excel , Power point , Internet - Basic principles & applications

MORPHOLOGY AND TAXONOMY OF ANGIOSPERM

Objectives :

1. To Know the local flora and to classify them systematically

2, To learn the principles of systematics

Unit : I

Morphology - Modification of tap root system - Modification of stem - aerial and underground stem – Morphology of leaf : Inflorescence types – Racemose, Cymose, mixed and special types, Fruits – simple, aggregate and multiple fruits.

Unit : II

Binomial Nomenclature , Herbarium technique – classification – Bentham & Hooker Engler and Prantl : ICPN and its role , Botanical Survey of India (BSI)

Unit : III

Study of the following families and their economic importance

1. Annonaceae 2. Capparidaceae 3. Rutaceae 4. Caesalpiniaceae 5. Cucurbitaceae

Unit : IV

Study of following families and their economic importance

6. Sapotaceae 7. Convolvulaceae 8. Asclepiadaceae 9. Acanthaceae 10. Lamiaceae

Unit : V

Study of following families and their economic importance

11. Amaranthaceae 12. Nyctaginaceae 13.Orchidaceae 14. Amaryllidaceae 15. Poaceae.

Text Books :

1. Venkateswarlu, V 1982. External Morphology of Angiosperms, S.Chand and Co New Delhi.

2. NarayanSwami, R.V ., Rao., K.N and Raman, A 1992 Outline of Botany S. Viswanathan Printers and Publishers . Chennai.

3. Singh .V and Jain .K 1991 . Taxonomy of Rastogi Publications Meerut

4. Vasishta, P.C. 1992 Taxonomy of Angiosperms R.Chand and Co New Delhi.

5. Lawrence G.H.M 1951 . Taxonomy of Vascular plants . The Macmillon co., New York

6. Heywood V.K 1967 Plant Taxonomy . Edward Arnold pub . ltd London.

Reference Books :

1. Rendle A.B. 1904 The classification of flowering plants Vol : 1. Gymnosperms and Monocotyledons. Cambridge University press. London .

2. Rendle A.B 1952 The classification of flowering plants Vol : II Dicotyledons Cambridge University Press. London.

HERBAL COSMETICS

ELECTIVE PAPER - IV

VI - SEMESTER

Objectives :

To understand the role of harbs as a source of natural and safe cosmetics

To Learn various herbal preparations of cosmetics

Unit - I

Introduction to herbal cosmetics

Need and advantages of Herbal cosmetics

Adverse effect of chemical cosmetics

Unit – II

Face care :

Face cleanser

Sun screens

Ache - pimple cream

Preparation of Face pack- any two

Unit – III

Skin care :

Skin beauty through panchakaruma

Turmeric - Milk lotion

Anti – wrinkle cream

Moisturzing cream

Preparation of Herbal Bathing powder

Unit – IV

Hair care :

Hair oil components and preparation of oil

Neeli Bringhadi oil

(Karisalan kanni thailam)

Amla Hair oil (Ashwini hair oil)

Amaranthus oil (Arsi keerai Thailam)

Herbal Shampoo

Unit : V

Foot Care Preparation of foot cream , senna, castor oil, turmeric,

SBS-VI -SEMESTER

FOOD PRESERVATION

Objectives :

1. To understand the importance of food preservation
2. To learn the methods and procedures of food preservation .

Unit – I

General Principles and methods of preservation

Physical Methods :

- Low temperature ,Exclusion of moisture (Drying)
- High temperature - Pasteurization canning

Unit : II

Preservatives : natural and synthetic – Sweetening agents Natural and synthetic – Flavouring agents - Natural and synthetic

Chemical Preservatives :

Vinegar , Sodium meta bisulphate ,sugar, sodium benzoate,salt

Unit – III

Preserved food products :

Morabba (Ginger) candy (Ash gourd) Amla candy

Unit - IV

Preserved food products - Jam capple Jelly strawberry,squash (orange)Juice (Grapes) sauce Tomato chilly

Unit – V

Preserved Food Products : Pickle (mango)

Ketchup (Tomato), sauce (Chilly)

Fermented food - Bread , Beer.

Reference Books :

1. Srivastava R.P. 1982 Preservation of fruits and vegetable products Bisher
2. Singh and Mahendra pal singh Publishers Dehradun .
3. Food microbiology - W.C. Frazies of D.C westhoff, 1983, Tata MC Grew –Hill Publishing company limited , New Delhi.
4. Food Microbiology - M.R. Adams & M.O Mass , V.S. Jothi for New Age international limited Publishers , New Delhi. 1996

III- Year -VI SEMESTER PRACTICAL PAPER - IV

PLANT PHYSIOLOGY,GENETICS, AND MOLECULAR BIOLOGY,APPLIED PLANT ECOLOGY AND MEDICINAL BOTANY

Plant Physiology :

To set up the following experiments and explain the working with suitable diagrams, Observation and interpretations .

1. Imbibition – Dilatometer and direct weight method .
2. Measurement of water potential chardakor;s method.
3. Determination of osmotic pressure –plasmolysis method .
4. Rate of transpiration - Ganongs photometer method under different conditions.
5. Rate of Photosynthesis – Hydrilla experiment of willmolt's bubbler method using different colour filters.
6. Rate of Photosynthesis in different concentration of Bicarbonate (Bubble method)
7. Extraction and separation of photosynthetic pigments by paper chromatography .
8. Respiration - Determination of RQ of different germination seeds using Ganongs respiration .

Experimental setup – Demonstration only

1. Dialatometer
2. Root Pressure
3. Suction due to transpiration
4. Ganongs respiroscope
5. Anaerobe respiration
6. Fermentation
7. Light screen Experiment
8. Mohl's half leaf experiment

Genetics and Molecular Biology

Monohybrid cross

1. To work out Genetic problem in Monohybrid cross pisum sativum
2. Monohybrid cross – Test cross
3. Incomplete Dominance -40 clock plant
4. Lethal gene – Maize

2. Dihybrid Cross

- To work out Genetic problems in Dihybrid Cross -Pisum sativum and other plants .
- Modification of 9,3,3, ratio due to Genic Interaction (a) . Dominate Epistasis (b). Recessive Epistasis (c). Complementary genes .

3. Multiple alleles

- A B O Blood group in man to solve genetic problems

4 Polygenic Inheritance

- To work out Genetic Problems

5 To write the explanatory notes on the Photographs models specimens - Genetics and molecular Biology

(a). DNA -watson and crick model

(b). DNA - Replication - model

(c). MRNA – Photograph

(d). LRNA - model

(e). Operon concept - model

Applied Plant Ecology

To observe the external morphology of different ecological groups of plants .

1. To study the internal morphology of the stem , root and Leaves of Ecological groups of plants.

Medicinal Botany

1. To observe the medicinal plants and write explanatory notes

2.To visit a herbal Institute for the production of herbal products

III- SEMESTER

NME – GARDENING AND NURSERY MANAGEMENT

Unit : I

Principles - Important features of garden - kitchen garden –plan lay out principles of kitchen gardening

Unit : II

Ornamental - Botanical garden - Components - Trophy , Topiary, Hedges, Edges, Borders, Arches, Lawn making, sunken garden, green house .

Unit : III

Indoor gardening – Hanging pots – Bonsai- Window Boxes – Potted plants – Water Gardening – Rockery – Flower arrangement .

Unit : IV

Introduction ,types of nurseries and cultural practices – seed collection , selection of propagule materials , storage and treatment.

Methods of Irrigation – Drip and sprinkler.

Unit :V

Planning and layout of orchards - cultivation method for fruit crops- cultivation of mango

NON MAJOR ELECTIVE (NME)

HERBAL THERAPEUTICS

IV- SEMESTER

Unit – I

Pharmacognocy Definition – A general survey of different system of medicines - Indian systems of medicine , siddha, Ayurvedha, and Unani, systems – future of pharmacognocy

Unit- II

A systematic study of crude drugs with reference to their vernacular name, family and uses.

1. Drugs obtained from roots : Rauwolfia
2. Drugs obtained from underground stem : Ginger
3. Drugs obtained from Bark : cinnamon

Unit – III

4. Drugs obtained from Wood : Ephedra

5.Drugs obtained from Leaves : Adhatoda

6.Drugs obtained from flowers : saffron

Unit : IV

7. .Drugs obtained from fruits ; Emblica

8. .Drugs obtained from seeds : Cardamom

9.. Drugs from all parts of plants : Neem

Unit : V

Anti cancer drugs : Definition - Biological source and medicinal uses of two important Anticancer plants a). Vinca b). Glorioosa

I-B.Sc,Zoology I-Semester

ANCILLARY - BOTANY-THEORY PAPER

Credit:4

Hours:4

Unit – I

Thallophyta : Structure, reproduction and life cycle of the following : Oedogonium Puccinia

Unit – II

Bryophyte, Pteridophyte and Gymnosperm General Characters, Structure, reproduction and life cycle of Marchantia, Lycopodium and cycas

Unit – III

Anatomy : Definition - simple tissues & complex tissues

Primary Internal structure of Dicot stem and monocot stem.&root

Embryology : Structure and developmme3nt of dicot stem .

Unit : IV

Plant Taxonomy : Bentham and Hooker's system of Classification (out line only) study of the following families with their economic importance - Annoaceae , Rubiaceae Euphorbiaceae, poaceae.

Unit – V

Physiology - Photosynthesis - structure of chloroplast pigment system, light and dark reactions (C3 C Pathway)

Ecology : Xerophytes, and Hydrophytes – Definition,classification and ecological adaptations.

Reference Books:

1. Gangulee H.C.Das,K.S. Dutta CT 1986-College Botany Vol.1
2. Gangulee and kar A.K.1986-college Botany Vol-II
3. Narayanasamy, R.V and Krishnamoorthi. KV – Outlines of Botany
4. Smith G.M 1955 – Cryptogamic Botany Vol- I&II
5. Ramasamy .S.N and Venkateswaralu – Taxonomy .

ANCILLARY BOTANY PRACTICAL PAPER

Algae, Fungi, Plant Pathology Bryophytes, Pteridophytes, Gymnosperms, Anatomy, Taxonomy, Plant physiology and Ecology

TIME : 3 HOURS MAX : 60 MARKS

1. Make suitable micropreparation of A stain and mount in Glycerin. Draw labelled sketches and identify giving reasons. submit the slide for valuation (6marks)
2. Prepare transverse sections of B stain and mount in glycerin. Draw laleelled sketches and identify giving reasons. submit the slide for valuation (6marks)
3. Refer C to respective family giving reasons (5marks)
4. Describe D in technical terms, draw laleelled sketches including L.S. of the flowers (5marks)
5. Comment on the Etiology E (5marks)
6. Comment on the set up F (5marks)
7. Identify, Draw sketches and write notes on G.H.I.J.K.L. (6×3=18)
8. Observation Note Book (10marks)

III- YEAR VI – SEMESTER

BOTANY MAJOR PRACTICAL – PAPER – IV

PLANT PHYSIOLOGY ,GENNETICS AND MOLECULAR BIOLOGY,APPLIED PLANT ECOLOGY AND MEDICINAL BOTANY

TIME: 3 HOURS

1. Take a lot, ask for requirement, Write the procedure ,set up the experiment and perform analysis or measurements as indicated
2. Take suitable anatomical preparation of 'A' stain it and mount in glycerine submit for the Valuation Write the comments.
3. Solve the given genetic problems 'B' &'C'
4. Identify the medicine plant 'D' and write about the medicinal importance & uses
5. Identify & Write critical notes on E,F,G,H,I
6. Observation notes Book.

BOTANY MAJOR PRACTICAL PAPER - IV

Key and Scheme of valuation

1. Physiology experiment

Experiment - 5 marks

Procedure - 5 marks

Data interpretation - 5 marks

2. Identification - 1 marks

slide submission - 1 marks

Diagram - 1marks

Notes - 2 marks

3. B Genetics problem - Dihybrid Ratio - 5 marks

C Genetics problem - Mono hybrid Ratio - 5 marks

4 D Medicinal plant identification - 1 marks

Notes - 3 marks

Diagram - 1 marks

5 .E,F,G,H,I

Identification - 1 (5×3=15marks)

Diagram - 1 marks

Notes - 3 marks

E- Physiology experiment set up

F- A chemical of Physiological important

G. A graph of physiological importance

H. Any specimen / photograph / Model of genetic interest

I. Any Photograph /Specimen/ Chemical/ model of Molecular Biological interest.

6. Observation Note book -- 10 marks

ANCILLARY BOTANY PRACTICAL EXAMINATION

KEY AND SCHEME OF VALUATION

TIME : 3 HOURS MAXIMUM MARKS : 60

1. A – Cryptogamic material / Pteridophyte or Gymnosperm
2. B - Plant Anatomy material monocot stem / Dicot stem / monocot root
3. C- Family identification [Families prescribed in the syllabus]
4. D - Technical term description – [Families prescribed in the syllabus]
5. E – Plant pathological specimen
6. F. Physiology set up
7. G. H.I. J.K.L- Macroscopic specimen and microscopic slides
8. Observation Note Book

KEY AND SCHEME OF VALUATION

1. A - Slide submission -2 (6 marks)
   Identification - 1
   Diagram - 1
   Notes - 2
2. B. Slide submission -2 (6 marks)
   Identification - 1
   Diagram - 1
   Notes - 2
3. C Family identification -- 1 (5 marks)
   Reasons - 4
4. D- Technical term description -- 5 (5 marks)
   Identification on notes - 2
   Diagram L.S. flower ,C.S of overy , floral diagram, plural formula -- 3
5. E Plant pathological specimen (5 marks)
   Identification - 1mark

Diagram -- 1 mark

   Causal organism & symptoms 2 mark

Control measures - 1 mark

6. F- Physiology set up (5 marks)
   Identification - 1mark
   Diagram - 1 mark
   Notes - 3 mark
7. G.H.I.J.K.and L (6×3=18)
   G. Algae, Identification - 1mark , Diagram - 1 mark, Notes -1 mark
   H. Fungi, Identification - 1mark , Diagram - 1 mark, Notes -1 mark
   I. Bryophyte, Identification - 1mark , Diagram - 1 mark, Notes -1 mark
   J. Pteridophyte, Identification - 1mark , Diagram - 1 mark, Notes -1 mark
   K. Gymnosperm , Identification - 1mark , Diagram - 1 mark, Notes -1 mark
   L. Taxonomy , Identification - 1mark , Diagram - 1 mark, Notes -1 mark
8. Observation Note Book -- (10marks)

APPLIED PLANT ECOLOGY

References :

1. A Text Book of environmental microbiology - Mohapatra .P.K
2. Concepts of ecology - N.Arumugam
3. Ecology and environment - P.D . Sharma
4. Environmental education and solid waste management A. Nag & K. Vijayakumar
5. Environmental Biology - P.D. Sharma
6. Modern Concept of ecology - H.D. Kumar .
7. Plant ecology – P.Shukla & Chandl

I – B.Sc, BOTANY - II – SEMESTER

PRACTICAL PAPER – I

Plant Diversity - I & II, Bacteriology and Plant Pathology

Credits : 4

Hours : 5

Time : 3 Hours Marks : 60

1. Prepare suitable micropreparations of 'A' 'B' and 'C' Stain and mount in glycerine Draw labeled sketches . Indentify giving reasons . submit the slides for valuation 3×6=18

2. Comment on the etiology of D 6marks

3. Spot at sight [Genus and group only] E,F,G and H 4×2=8

4. Draw sketches and write critical notes on identifying giving reasons . I, J, K, L, and M 5×3=15

5. Comment on N 3 marks

6. Observation note Book 10 marks

I –B.Sc, BOTANY – MAJOR PARCTICAL PAPER – I

KEY AND SHEME OF VALUATION

1. Algae , Bryophytes , Pteridophytes, and Gymnosperm material to given in A, B, and C

A - Algae, B- Pteridophyte, C- Gymnosperm, Slide submission -2 marks
Identification – 1 marks
Diagram - 1 marks
Reasons - 2 marks 3×6=18

2. D - Plant pathology specimen prescribed in the syllabus

Identification - 1 marks
Causal organism - 1 marks
Diagram - 2 marks
Two symptoms - 2 marks 6 marks

3. Macroscopic specimens prescribed in the syllabus E, F, G and H
   Genus - 1 marks
   Group - 1 marks 4×2=8

4. Write critical notes on I, J, K, L and M , cryptogamic slides
   I- Algae, J – Fungi, K- Bryophyte, L- Pteridophyte and M- Gymnosperm
   Identification - 1 marks
   Diagram - 1 marks
   Notes - 1 marks 5×3=15

5. Fossil slide
   Identification - 1 marks
   Diagram - 1 marks
   Notes - 1 marks 3 marks

6. Observation note book - 10 marks

III- B.Sc, BOTANY V- SEMESTER
Major paper IX - Commercial plant products

Credits :4
Hours : 5

Objectives :

1. To identify and explore the commercially important plant products
2. To study the extraction methods of some commercial plant products

Unit : I

Importance of economically important plant products – Brief introduction about the food grains –wheat ,barley , pulses – bengal gram, soyabean, spices- pepper, clove, woods – teak, indian rosewood

Unit : II

Economically important plant products – wood, rubber drugs - vasaka, turmeric , coir industry – agave and banana , oil industry - sandal wood oil, eucalyptus oil

Unit : III

Processing of Coffee powder – Types of coffee and grading of coffee

Unit: IV

Sugar Industry – Extraction of sugar from sugarcane

Unit: V

Paper making Industry – Preparation of pulp – type of Paper, Making of paper

Reference Books:

1, Economic Botany – B.P .Pandey , S.Chand ltd 1999
2 . Economic Botany – Sampat Nehra - 2007
3 . Morphology and Economic Botany of Angisperms , Dr. S.Sundararajan, Anmol Publication P.Ltd. 1997
4 . Economic Botany - Robert Hill
5 . Industrial Biotechnology .K.C. Casida

II- B.Sc, BOTANY IV – SEMESTER
MAJOR PRACTICAL PAPER -II

Biochemistry, Biophysics, Biostatistics, Cell Biology, Embryology and plant Anatomy

Credits :4
Hours : 4

Time : 3 Hours Marks: 60

1. Taking lots from the set of experiments, write the procedure , proceed with the experiment tabulate and interpret the results 14 marks

2. Prepare transverse section of 'A' and 'B' stain and mount in Glycerine . Draw labeled sketches. Identify giving reasons. submit the slide for valuation 2×8=15

3. Make suitable micropreparations of C Identify at least any one stage and show at to the examiner for valuation 4-marks

4. Dissect and take out the embryo from the material 'D' mount and submit it for valuation

5. Solve the given statistics problem - 4 marks

6. Write critical notes on E, F, G, H, and I, 5×2=10

7. Observation Note Book- 10 marks

PRACTICAL PAPER - II
KEY AND SCHEM OF VALUATION

1. Physiology experiment Procedure - 5 marks
   Tabulation and interpretation of results 9 marks

2. A- Dicot stem, Boerhaavia stem
   B - Monocot stem, Monocot root
   Identification - 1 marks
   Diagram - 3 marks
   Description - 4 marks 2×8=16

3. Make suitable micropreparations of 'C' Identify at least any one stage and show it to the examiner for valuation 4 marks

4. Dissect and take out the embryo from the material 'D' mount and submit it for valuation 4 marks

5. Solve the given statistics problem 2 marks

6. Write critical notes on E, F, G, H and I 5×2=10

7. Observation note Book 10 marks

To approve the Syllabus of B.Sc, Botany and

Elective Papers :

III- Semester - Basic Informatics

IV - Semester -Horticulture and Landscaping

V - Semester -Plant diversity, conservation and management

VI –Semester - Herbal Cosmetics

SBS :

III- Semester -Mushroom for Livelihood

IV – Semester-Bio-fertilizers

V – Semester – Dietary and nutritional Values of fruits and vegetables

VI - Semester – Food Preservation

NME :

III - Semester - Gardening and Nursery management

IV – Semester – Herbal therapeutics

PRACTICAL PAPER - I

Plant Diversity I & II Bacteriology and Plant Pathology

1. To make suitable micro preparations of the prescribed in Fungi pteridophytes and Gymnosperms

2. To observe and identify Macroscopic and Microscopic specimens at sight and Write illustrated and explanatory notes on them .

3. To observe and identify at sight and make detailed study of the type of the Disease prescribed in the syllabus

4. To maintain an observation note and to submit it for external valuation

I-B.Sc,Zoology I-Semester

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Credit:4

Hours:4

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Unit – II

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Embryology : Structure and developmme3nt of dicot stem .

Unit : IV

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