

BOARD OF STUDIES IN B.Sc HORTICULTURE

2019-2020

DEPARTMENT OF BOTANY, MICROBIOLOGY AND HORTICULTURE

SYLLABUS FOR B.Sc HORTICULTURE



PITHAPUR RAJAHS GOVERNMENT COLLEGE

Autonomous and Accredited with 'A' Grade by NAAC (3.17 CGPA)

KAKINADA – 533 001, E G Dist., ANDHRA PRADESH

P R GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA, E.G.Dist.

Department of Botany, Microbiology and Horticulture

The Board of Studies meeting for **Horticulture** subject during the academic year 2019-2020 is conducted at the Dept. of Botany, Microbiology & Horticulture on **April 2019** with Smt. T.KALPANA, Lecturer in-Charge in the chair along with the following members.

Name, Designation and Address

Signature

1. Chair Person:

Smt T.KALPANA
Lecturer in-Charge
Dept. of Horticulture
PRGC(A), Kakinada

2. AdiKavi Nannaya University Nominee:

Dr. S. SAI DURGA PRASAD,
Principal
K.G.R.L College (A),
Bhimavaram, West Godavari District
Mobile: 9948411470
E-Mail: durgaprasad23@gmail.com

3. Members Nominated by Executive Council of the College:

a. Industrial Expert:

B.V.RAMANA
Assistant Director
Dept. of Horticulture
Kakinada
Mobile: 8333835469
Email: adhkakinada@gmail.com

b. Subject Expert 1:

Dr. A.SRINIVASA RAO,
Lecturer in charge of Botany,
Govt. Degree College, Mandapeta.
Mobile: 8309843949
E-Mail: drannabattulasrao@gmail.com

c. Subject Expert 2:

Smt. P.A.S.S.KRISHNA KUMARI
Lecturer in Botany
ASD Women's College
Kakinada, EG Dist.
Mobile: 9121830415
Email: pullelakk21@gmail.com

Name, Designation and Address

Signature

d. **Subject Expert 3:**

Prof. B.V.RAGHAVA RAO
Former Dean Horticulture
Horticultural University
Pedavegi

e. **Alumni member:**

Dr. D R SALOMI SUNEETHA
Professor & Head
Plant Physiology, Biochemistry & Microbiology Dept.
College of Horticulture
Dr YSR Horticultural University
Venkatramannagudem-534101
W G Dist
Mobile: 9491608088
Email: salomibiochem@gmail.com

4. **Members from the College:**

a. **Faculty member:**

1. **Smt. P.SARA**
Lecturer in Botany(Regular)
2. **B.RAJA RAJESWARI**
Contract Faculty in Botany
3. **S. BHARATHI DEVI**
Guest Faculty in Horticulture
4. **V. ANITHA**
Guest Faculty in Botany
5. **G. SRAVANI**
Guest Faculty in Botany

b. **Student members:**

- 1.
- 2.
- 3.

**PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA
DEPARTMENT OF BOTANY, MICROBIOLOGY & HORTICULTURE**

Student will know about selection of nursery, raising of nursery beds, structures for planting and its problems and management

PROGRAMME OUTCOMES FOR HORTICULTURE

B.Sc. Horticulture programmes aim towards:

- Imparting detailed knowledge of Horticulture and its allied branches
- Facilitating detailed study of allied branches required to raise the income of farmers
- Providing detailed knowledge of horticulture in India and Indian farmers income generating enterprises
- Knowledge dissemination regarding various technique of farming and farming system in India
- Detailed knowledge of cultivation practices, climate, Soil, fertilizers
- Study of market and marketing of horticulture produce.
- Specific knowledge of various branches specialized to their studies.
- Detailed knowledge on the subject to improve the farmer's condition by their contributions.

PROGRAMME SPECIFIC OUTCOMES

- Considers the acquisition, integration, and application of plant-science knowledge expected for horticulturists. This knowledge is often taught in formal classes and through books.
- The capacity to integrate knowledge across a range of disciplines (e.g., business, soils, pathology), and have the ability to actually perform physical tasks that require practice and training (e.g., grafting).
- To develop creative skills to solve problems and improve current systems.
- Sets an expectation that graduates will be able to communicate about more than just the science behind horticulture, but also about the social, spiritual, and cultural importance of plants.
- Finally, horticulture graduates ought to have developed leadership skills, learned how to work in teams, and exhibit a high level of professionalism and personal responsibility.

COURSE OUTCOMES:

SEMESTER – I: BASIC CONCEPTS OF HORTICULTURE AND SOIL SCIENCE

Unit I: Introduction to Horticulture

Objective

To study Horticulture definition, divisions and zones with examples, importance and its scope,
Learning outcome

Student will know about horticulture introduction, its branches, importance and future aspects in all the terms including employment generation, environmental protection and human resource development.

Unit II: Classification and Nutritional values of Horticulture crops

Objective

To study the classification, nutritional value

Learning outcome

Student will know about classification based on soil and climatic requirements, its nutritional importance and export, import value

Unit III: Environmental factors - Horticulture crops

Objective

To acquaint Soil properties, climatic factors and biotic and abiotic stresses on crop production.

Learning outcome

Student will know about soil physical and chemical properties Climatic factors, micro climate, pollution and influence of biotic and abiotic stresses on crop production

Unit IV: Soil as a Medium for Plant Growth

Objective

To acquaint Soil formation, soil taxonomy, colloids as a Medium for Plant Growth

Learning outcome

Student will know about Minerals and Weathering to form Soils, Soil color, texture and structure; Other Physical Properties and Stability. Soil colloids and charges

Unit V: Mineral nutrition of plants

Objective

To study Soil organic matter as a source of nutrient management

Learning outcome

Student will know about Soil organic matter, microorganisms; Soil faunal ecology and Integrated nutrient management

COURSE SPECIFIC OUTCOMES

Students will understand Horticulture importance, scope, nutritional values, soil factors, environmental factors and mineral nutrition all these which is helpful for plant growth and also income generation to farmers

SEMESTER – II: PLANT PROPAGATION METHODS AND NURSERY MANAGEMENT

Unit -1: Basics of propagation; structures and media for propagation

Objectives

To study the Principles and classification of plant propagation methods

Learning outcome

Student will know about plant propagation methods, economic and ecological factors

Unit – 2: Sexual propagation/Seed propagation

Objectives

To study the Sexual propagation, Seed germination and its factors

Learning outcome

Student will know about propagation methods, seed germination, factors and treatments required for germination

Unit – 3: Propagation through vegetative organs

Objectives

To acquaint the Asexual propagation, Plant propagation structures, containers and media

Learning outcome

Student will know about propagation methods and its application, required media for its growth and cultivation

Unit – 4: Vegetative propagation techniques

Objectives

To acquaint the Propagation techniques by cuttings, layering, grafting, budding

Learning outcome

Student will know about different techniques and its application to the fruits and flowering plants

Unit –5: Nursery management practices

Objectives

To study the Nursery, Nursery structures, Problems and its control

Learning outcome

COURSE SPECIFIC OUTCOMES

Students will understand selection of nursery, different propagation techniques and its application to fruits and flowers finally its management

SEMESTER-III: OLERICULTURE

Unit -1: Solanaceous vegetables

Objectives

To study the cultivation details of Solanaceous vegetables

Learning outcome

Student will know about Importance, morphology and taxonomy, varieties, climate and soil, seeds and sowing, manuring, irrigation, intercultural operations, diseases and their control, harvesting and yield of tomato, brinjal, capsicum

Unit – 2: Leafy vegetables

Objectives

To acquaint cultivation details of leafy vegetables

Learning outcome

Student will know about Importance, morphology and taxonomy, varieties, climate and soil, seeds and sowing, manuring, irrigation, intercultural operations, diseases and their control, harvesting and yield of amaranthus, spinach, coriander, methi

Unit – 3: Root and Tuber crops

Objectives

To acquaint cultivation details of root and tuber crops

Learning outcome

Student will know about Importance, morphology and taxonomy, varieties, climate and soil, seeds and sowing, manuring, irrigation, intercultural operations, diseases and their control, harvesting and yield of *Colocasia* and *Dioscorea*, Sweet Potato and Tapioca, Carrot and Beet root

Unit – 4: Cole crops

Objectives

To study the cultivation practices of cabbage and cauliflower

Learning outcome

Student will know about Importance, morphology and taxonomy, varieties, climate and soil, seeds and sowing, manuring, irrigation, intercultural operations, diseases and their control, harvesting and yield of cabbage and cauliflower

Unit –5: Leguminous vegetables

Objectives

To acquaint cultivation practices of leguminous vegetables

Learning outcome

Student will know about Importance, morphology and taxonomy, varieties, climate and soil, seeds and sowing, manuring, irrigation, intercultural operations, diseases and their control, harvesting and yield of cluster bean, double bean, cow pea and *Dolichos*

COURSE SPECIFIC OUTCOMES

Students will understand Importance, morphology and taxonomy, varieties, climate and soil, seeds and sowing, manuring, irrigation, intercultural operations, diseases and their control, harvesting and yield of solanaceous, leafy vegetables, cole crops and leguminous vegetables

SEMESTER-IV: ORNAMENTAL HORTICULTURE, FLORICULTURE AND LANDSCAPING

Unit -1: Leafy and flower ornamentals

Objectives

To study the classification and value chain of ornamentals

Learning outcome

Student will know about application of leafy and flower ornamentals also its value in India and abroad

Unit – 2: Fundamentals of Landscaping

Objectives

To study the principles of landscaping, features and styles of gardening

Learning outcome

Student will know about importance and scope of landscaping, Indoor and outdoor gardens; garden features, garden adornments

Unit – 3: Cultivation of ornamentals

Objectives

To acquaint Importance, description, cultivation of ornamentals

Learning outcome

Student will know about the use of annuals; biennials, herbaceous perennials, woody perennials and identification of ornamental trees, shrubs and climbers used for various purposes. Skills on flower shows and flower arrangements.

Unit – 4: Commercial floriculture

Objectives

To acquaint importance and cultivation details of flower crops

Learning outcome

Student will know about importance of commercial floriculture in India also cultivation practices of Rose, Jasmine, *Chrysanthemum* and Marigold, Tuberose, Aster, Dahlia, Gerbera, Gladiolus

Unit –5: Management practices for ornamental plants

Objectives

To study the horticultural practices, handling methods and storage techniques

Learning outcome

Student will know about use of Plant Growth Regulators, plant protection methods, special horticultural practices also harvesting and post-harvest handling methods required for proper grading, packing, storage and marketing of ornamental flowers.

COURSE SPECIFIC OUTCOMES

Students will understand importance of ornamental plants and its principles, features for gardening. Skills on flower arrangement techniques also different flowers cultivation details finally its protection and proper management techniques.

PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA
DEPARTMENT OF BOTANY, MICROBIOLOGY & HORTICULTURE

HORTICULTURE COURSE STRUCTURE AND SYLLABUS

YEAR	SEMESTER	PAPER	PAPER TITLE	MARKS	CREDITS
I YEAR	I	I	BASIC CONCEPTS OF HORTICULTURE AND SOIL SCIENCE	60+40	3
		I	PRACTICAL	35+15	2
	II	II	PLANT PROPAGATION METHODS AND NURSERY MANAGEMENT	60+40	3
		II	PRACTICAL	35+15	2
II YEAR	III	III	OLERICULTURE	60+40	3
		III	PRACTICAL	35+15	2
	IV	IV	ORNAMENTAL HORTICULTURE, FLORICULTURE AND LANDSCAPING	60+40	3
		IV	PRACTICAL	35+15	2
III YEAR	V	V	CONCEPTS OF POMOLOGY	60+40	3
		V	PRACTICAL	35+15	2
		VI	DISEASES OF HORTICULTURE PLANTS	60+40	3
		VI	PRACTICAL	35+15	2
	VI	VII ELECTIVE	BREEDING OF HORTICULTURE CROPS	60+40	3
		VII ELECTIVE	PRACTICAL	35+15	2
		VIII-A-1	WEED WATER MANAGEMENT IN HORTICULTURE CROPS	60+40	3
		VIII-A-1	PRACTICAL	35+15	2
		VIII-A-2	NUTRITION OF HORTICULTURE CROPS AND ITS MANAGEMENT	60+40	3
		VIII-A-2	PRACTICAL	35+15	2
		VIII-A-3	PROJECT	100	3
		VIII-A-3	PROJECT PRACTICAL WORK	35+15	2

PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA
DEPARTMENT OF BOTANY, MICROBIOLOGY & HORTICULTURE

HORTICULTURE Model Blue Print for the Question paper and choice for I & II Years (w.e.f. 2019-20 Academic Year)

S.No	Type of Questions	To be given in the Question paper			To be Answered		
		No. of Questions	Marks Allotted to each Question	Total marks	No. of Questions	Marks Allotted to each Question	Total marks
1	<u>SECTION-A</u> ESSAY QUESTIONS (EQ)	5	10	50	3	10	30
2	<u>SECTION-B</u> SHORT ANSWER QUESTIONS (SAQ)	10	5	50	6	5	30
Total Questions & Total Marks =		15	-	100	9	-	60

$$\text{Percentage of choice given} = \frac{100 - 60}{100} \times 100 = \frac{40}{100} \times 100 = 40\%$$

PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA
I B.Sc-HORTICULTURE-I / I Semester End (W.E.F. 2019-20)
BASIC CONCEPTS OF HORTICULTURE AND SOIL SCIENCE
(COURSE: HORT1222)

Total hours of Teaching 60hrs @ 4 hrs per week

Total Credits:03

UNIT-I: INTRODUCTION TO HORTICULTURE (12h)

1. Definition of Horticulture, Importance of horticulture in terms of economy, production,
2. Employment generation, environmental protection and human resource development.
3. Scope for horticulture in India.
4. Divisions of horticulture with suitable examples and their importance. Fruit and Vegetable zones of India and Andhra Pradesh.

UNIT-II: CLASSIFICATION AND NUTRITIONAL VALUES OF HORTICULTURE CROPS (12h)

1. Classification of Horticultural crops based on soil and climatic requirements.
2. Nutritive value of horticultural crops.
3. Export and import of horticulture plants

UNIT-III: ENVIRONMENTAL FACTORS - HORTICULTURE CROPS (12h)

1. Influence of soil – physical and chemical properties
2. Climatic factors – light, photoperiod, temperature, relative humidity, rainfall.
3. Micro climate, pollution
4. Influence of biotic and abiotic stresses on crop production.

UNIT-IV: SOIL AS A MEDIUM FOR PLANT GROWTH (12h)

1. Minerals and Weathering to Form Soils; Factors of Soil Formation.
2. Soil Taxonomy; Soil color, texture and structure; Other Physical Properties and Stability.
3. Soil Colloids and Charges; Ion adsorption and exchange.
4. Soil pH and Acidity; Soil Alkalinity and Salinity

UNIT-V: MINERAL NUTRITION OF PLANTS (12h)

1. Soil organic matter
2. Soil Microorganisms; Soil faunal Ecology.
3. Integrated nutrient management and soil tests.

PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA
I B.Sc-HORTICULTURE-I / I Semester End (W.E.F. 2019-20)
HORTICULTURE PRACTICAL SYLLABUS
BASIC CONCEPTS OF HORTICULTURE AND SOIL SCIENCE

Total hours of laboratory Exercises 30 hrs @ 2 per week

Total credits:02

SEMESTER-I PRACTICAL SYLLABUS

1. Study of tools and implements in horticulture.
2. Layout of different planting systems.
3. Layout of nutrition garden.
4. Preparation of nursery beds for sowing of vegetable seeds.
5. Digging of pits for fruit plants.
6. Preparation of fertilizer mixtures and field application.
7. Identification and management of nutritional disorders in vegetables.
8. Collection and preparation of soil samples, estimation of moisture, EC, pH and bulk density.
9. Textural analysis of soil by Robinson's pipette method, chemical analysis of soil – Fe₂O₃, P, K, Ca, Mg and S, total N, organic carbon and cation exchange capacity

Suggested Readings:

- ❖ Kumar, N. 1990. Introduction to Horticulture, Rajyalakshmi Publications, Nagarcovil, Tamilnadu.
- ❖ Jitendra Sing, 2002. Basic Horticulture, Kalyani Publishers, Hyderabad.
- ❖ Yerima Bernard P.K. and E. van Ranst, 2005. Introduction to Soil Science, Trafford Publishing.

PRACTICAL MODEL PAPER:

1. Major Experiment	-	15 Marks
2. Minor	-	10 Marks
3. Record and Viva	-	10 Marks

Total	-	35 Marks
CCA	-	15 Marks

TOTAL MARKS	-	50 Marks

PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA
I Year B.Sc., Degree Examinations at I Semester End
Horticulture Paper I: BASIC CONCEPTS OF HORTICULTURE AND SOIL SCIENCE
(Course: HORT1222 Model Question Paper w.e.f. 2019-20)

Time: 2½ Hrs.

Max. Marks: 60

Section – A

3×10 =30M

Answer any Three of the following questions, Draw neat and labeled diagrams wherever necessary

1. Write an essay on importance and scope of horticulture
2. Influence of biotic and abiotic stresses on crop production
3. Weathering and soil formation
4. Soil faunal ecology
5. Write an essay on nutrition value of Horticultural crops with examples

Section –B

6x5 = 30

Answer any Six of the following Questions, Draw neat and labeled diagrams wherever necessary

1. Horticulture zones of Andhra Pradesh and India
2. Importance of horticulture in terms of economy and production
3. Export and import trade in horticulture
4. Classification of crops based on climate
5. Chemical properties of soil
6. Methods of textural analysis
7. Soil physical constraints
8. Properties of soil colloids
9. Explain soil tests and its objectives
10. Integrated nutrient management

BLUE PRINT FOR QUESTION SETTER

Unit no. / Title	SAQ	LAQ	Marks allotted to the Module
Unit – 1/ Introduction to Horticulture	2	1	20
Unit – 2/ Classification and Nutritional value of Horticultural crops	2	1	20
Unit – 3/ Environmental factors – Horticultural crops	2	1	20
Unit – 4/ Soil as a medium for plant growth	2	1	20
Unit – 5/ Mineral nutrition of plants	2	1	20
Total marks allotted to all questions including choice =			100

Note: Question paper setters are requested to adhere strictly to the above blue print while preparing the said paper

PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA
I B.Sc., -Horticulture-1 / I Semester End (W.E.F. 2019-20)
BASIC CONCEPTS OF HORTICULTURE AND SOIL SCIENCE
HORTICULTURE PAPER -1 QUESTION BANK (SEMESTER-1)

UNIT – 1

5 Marks QUESTIONS

1. Divisions of horticulture zones of the country
2. Importance of horticulture in terms of economy, production
3. Write an essay on importance and scope of horticulture

10 Marks QUESTIONS

1. Recent trends in horticulture
2. Write an essay on importance of horticulture in terms of employment generation, environmental protection and human resource development

UNIT – 2

5 Marks QUESTIONS

1. Export and import trade in horticulture crops
2. Classification of crops based on climate

10 Marks Questions

1. Classification of horticultural crops based on soil and climatic requirements
2. Write an essay on nutrition value of Horticultural crops with examples

UNIT – 3

5 Marks Questions

1. Types of soil structure
2. Types of pollution
3. Physical and chemical properties of soil

10 Marks Questions

1. Influence of climatic factors on the growth of plants
2. Influence of biotic and abiotic stresses on crop production

UNIT – 4

5 Marks Questions

1. Methods of textural analysis
2. Properties of soil colloids
3. Factors effecting cation exchange capacity
4. Factors effecting soil pH
5. Soil physical constraints

10 Marks Questions

1. Classification of soil colloids
2. Cation and anion exchange capacity
3. Soil organic matter
4. Explain soil taxonomy
5. Weathering and soil formation

UNIT – 5

5 Marks Questions

1. Integrated nutrient management
2. Explain soil tests and its objectives
3. Soil Micro organisms

10 Marks Questions

1. Soil faunal ecology
2. Soil organic matter

PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA
I B.Sc-HORTICULTURE-II / II Semester End (W.E.F. 2019-20)
PLANT PROPAGATION METHODS AND NURSERY MANAGEMENT
(COURSE: HORT2222)

Total hours of Teaching 60hrs @ 4 hrs per week

Total Credits:03

UNIT-I: BASICS OF PROPAGATION, STRUCTURES AND MEDIA FOR PROPAGATION (12h)

1. Introduction, principles and classification of plant propagation methods.
2. Selection of site for commercial nursery.
3. Ecological and economic factors.

UNIT-II: SEXUAL PROPAGATION/SEED PROPAGATION (12h)

1. Sexual propagation and its importance
2. Seed germination, process of seed germination.
3. Factors affecting seed germination
4. pre-germination treatments and viability tests.

UNIT-III: PROPAGATION THROUGH VEGETATIVE ORGANS (12h)

1. Asexual propagation and its importance
2. Plant propagation structures, containers and media.
3. Orchid propagation by rhizome.

UNIT-IV: VEGETATIVE PROPAGATION TECHNIQUES (12h)

1. Propagation by cuttings: Root, leaf and stem cuttings
2. Plant propagation by layering – Simple, serpentine, mound and air layering.
3. Plant propagation by grafting – approached and detached (whip, cleft, side veneer and bark)
4. Plant propagation by budding – T-, patch and chip budding techniques.

UNIT-V: NURSERY MANAGEMENT PRACTICES (12h)

1. Definition of nursery; Nursery- site selection, lay out, records
2. Different types of nursery beds – flat beds, raised beds and sunken beds, their merits and demerits.
3. Nursery structures - Potting, repotting; Different nursery techniques and their management.
4. Problems in nursery management and its control; Nursery accreditation and certification.

PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA
I B.Sc-HORTICULTURE-II / II Semester End (W.E.F. 2019-20)
HORTICULTURE PRACTICAL SYLLABUS
PLANT PROPAGATION METHODS AND NURSERY MANAGEMENT

Total hours of laboratory Exercises 30 hrs @ 2 per week

Total credits:02

SEMESTER-II PRACTICAL SYLLABUS

1. Media for propagation of plants in nursery beds, pot and mist chamber.
2. Preparation of nursery beds and sowing of seeds. Raising of rootstock.
3. Seed treatments for breaking dormancy.
4. Preparation of plant material for potting. Hardening plants in the nursery.
5. Practicing different types of cuttings, layering, grafting and buddings.
6. Preparation of plant growth regulators for seed germination and vegetative propagation.

Suggested Readings:

- ❖ Sadhu, M.K. 1996. Plant Propagation. New Age International Publishers, New Delhi.
- ❖ Sarma, R.R. 2002. Propagation of Horticultural Crops: Principles and Practices, Kalyani Publishers, New Delhi.
- ❖ Hartman, HT and Kester, D.E. 1976. Plant Propagation. Principles and Practices, Prentice Hall of India Pvt. Ltd. Bombay.

PRACTICAL MODEL PAPER:

1. Major Experiment	-	15 Marks
2. Minor	-	10 Marks
3. Record and Viva	-	10 Marks

Total	-	35 Marks
CCA	-	15 Marks

TOTAL MARKS	-	50 Marks

PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA
I Year B.Sc., Degree Examinations at II Semester End
Horticulture Paper II: PLANT PROPAGATION METHODS AND NURSERY
MANAGEMENT

(Course: HORT2222 Model Question Paper w.e.f. 2019-20)

Time: 2½ Hrs.

Max. Marks: 60

Section – A

3x10 = 30

Answer any Three of the following questions. Draw neat and labeled diagrams wherever necessary.

1. Explain classification of plant propagation methods
2. Types of nursery beds and its merits, demerits
3. Describe the factors affecting seed germination
4. Orchid propagation by rhizome
5. Write an essay on plant propagation by layering

Section –B

6x5 = 30

Answer any Six of the following questions. Draw diagrams wherever necessary

6. Economic factors
7. Explain about propagation by division and separation
8. Nursery structures, techniques and their management
9. Explain asexual propagation
10. What are the pre germination treatments
11. Nursery accreditation and certification
12. Natural modification of layering
13. Explain importance of sexual propagation
14. Selection of site for commercial nursery
15. Plant propagation structures

BLUE PRINT FOR QUESTION SETTER

Unit no. / Title	SAQ	LAQ	Marks allotted to the Module
Unit – 1/ Basics of propagation, Structures and media for propagation methods	2	1	20
Unit – 2/ Sexual Propagation/ Seed Propagation	2	1	20
Unit – 3/ Propagation through Vegetative organs	2	1	20
Unit – 4/ Vegetative Propagation Techniques	2	1	20
Unit – 5/ Nursery management Practices	2	1	20
Total marks allotted to all questions including choice =			100

Note: Question paper setters are requested to adhere strictly to the above blue print while preparing the said paper

PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA
I B.Sc., -Horticulture-II / II Semester End (W.E.F. 2019-20)
PLANT PROPAGATION METHODS AND NURSERY MANAGEMENT
HORTICULTURE PAPER -II QUESTION BANK (SEMESTER-II)

UNIT – 1

5 Marks Questions

1. Ecological factors
2. Economic factors
3. Site selection
4. Types of media

10 Marks Questions

1. Classification of plant propagation methods

UNIT – 2

5 Marks Questions

1. Pre germination treatments
2. Seed germination

10 Marks Questions

1. Describe the factors affecting seed germination
2. Sexual propagation

UNIT – 3

5 Marks Questions

1. Asexual propagation
2. Plant propagation structures

10 Marks Questions

1. Explain Orchid propagation by rhizome

UNIT – 4

5 Marks Questions

1. Propagation by division and separation
2. Natural modification of layering
3. Propagation by cutting

10 Marks Questions

1. Write an essay on plant propagation by grafting
2. Write an essay on plant propagation by budding
3. Write an essay on plant propagation by layering

UNIT – 5

5 Marks Questions

1. Nursery structures, techniques and their management
2. Nursery accreditation and certification

10 Marks Questions

1. Problems in nursery management and its control
2. Write an essay on site selection, layout, records
3. Types of nursery beds and its merits, demerits

PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA
II B.Sc-HORTICULTURE-III / III Semester End (W.E.F. 2019-20)
OLERICULTURE (COURSE: HORT3222)

Total hours of Teaching 60hrs @ 4 hrs per week

Total Credits:03

UNIT-I: SOLANACEOUS VEGETABLES (12h)

Importance, morphology and taxonomy, varieties, climate and soil, seeds and sowing, manuring, irrigation, intercultural operations, diseases and their control, harvesting and yield of following crops:

- a. Cultivation of Brinjal
- b. Cultivation of tomato
- c. Cultivation of Capsicum

UNIT-II: LEAFY VEGETABLES (12h)

Importance, morphology and taxonomy, varieties, climate and soil, seeds and sowing, manuring, irrigation, intercultural operations, diseases and their control, harvesting and yield of following crops:

- a. Cultivation of Amaranth and Spinach
- b. Cultivation of Coriander and Mentha

UNIT-III: ROOT AND TUBER CROPS (12h)

Importance, morphology and taxonomy, varieties, climate and soil, seeds and sowing, manuring, irrigation, intercultural operations, diseases and their control, harvesting and yield of following crops:

- a. Cultivation of Colocasia and Dioscorea
- b. Cultivation of Sweet Potato and Tapioca
- c. Cultivation of Carrot and Beet root

UNIT-IV: COLE CROPS (12h)

Importance, morphology and taxonomy, varieties, climate and soil, seeds and sowing, manuring, irrigation, intercultural operations, diseases and their control, harvesting and yield of following crops:

- a. Cultivation of Cabbage
- b. Cultivation of Cauliflower

UNIT-V: LEGUMINOUS VEGETABLES (12h)

Importance, morphology and taxonomy, varieties, climate and soil, seeds and sowing, manuring, irrigation, intercultural operations, diseases and their control, harvesting and yield of following crops:

- a. Cultivation of Cluster bean and double bean
- b. Cultivation of Cow pea and Dolichos

PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA
II B.Sc-HORTICULTURE-III / III Semester End (W.E.F. 2019-20)
HORTICULTURE PRACTICAL SYLLABUS
OLERICULTURE

Total hours of laboratory Exercises 30 hrs @ 2 per week

Total credits:02

SEMESTER-III PRACTICAL SYLLABUS

1. Identification of vegetable seeds and vegetable crops at different growth stages
2. Sowing/ transplanting of vegetables in main field
3. Determining the germination percentage of vegetable seed
4. Preparing vegetable nursery beds
5. Raising vegetable seedlings in nursery bed and portrays
6. Land preparation for sowing/ transplanting of vegetable crops
7. Fertilizer application for vegetable growing
8. Identification of major diseases and insect pests of vegetables
9. Visit to vegetable field to study methods of vegetable cultivation

Suggested Readings:

- ❖ Bose T K et al. (2003) Vegetable crops, Naya Udhog Publishers, Kolkata.
- ❖ Singh D K (2007) Modern vegetable varieties and production, IBN Publisher Technologies, International Book Distributing Co, Lucknow.
- ❖ Premnath, Sundari Velayudhan and D P Sing (1987) Vegetables for the tropical region, ICAR, New Delhi

PRACTICAL MODEL PAPER:

1. Major Experiment	-	15 Marks
2. Minor	-	10 Marks
3. Record and Viva	-	10 Marks

Total	-	35 Marks
CCA	-	15 Marks

TOTAL MARKS	-	50 Marks

PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA
II Year B.Sc., Degree Examinations at III Semester End
Horticulture Paper III: OLERICULTURE
(Course: HORT3222 Model Question Paper w.e.f. 2019-20)

Time: 2½ Hrs.

Max. Marks: 60

Section – A

3x10 = 30

Answer any **Three** of the following questions

1. Production technology of brinjal
2. Production technology of amaranthus
3. Cultivation practices of beet root
4. Production technology of cauliflower
5. Cultivation practices of cluster bean

Section –B

6x5 = 30

Answer any **Six** of the following questions. Draw diagrams wherever necessary

6. Resistant varieties in Tomato leaf curl disease
7. Physiological disorders of Tomato
8. Sex expression in spinach
9. Different groups of leafy vegetables
10. Physiological disorders of carrot
11. Cultivation practices of sweet potato
12. Seed production in cabbage
13. Explain climate and soil conditions of dolichos and double bean
14. Physiological disorders of cauliflower
15. Important varieties of cowpea and cluster bean

BLUE PRINT FOR QUESTION SETTER

Unit no. / Title	SAQ	LAQ	Marks allotted to the Module
Unit – 1/ Basics of propagation, Structures and media for propagation methods.	2	1	20
Unit – 2/ Sexual Propagation/ Seed Propagation	2	1	20
Unit – 3/ Propagation through Vegetative organs	2	1	20
Unit – 4/ Vegetative Propagation Techniques	2	1	20
Unit – 5/ Nursery management Practices	2	1	20
Total marks allotted to all questions including choice =			100

Note: Question paper setters are requested to adhere strictly to the above blue print while preparing the said paper

PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA
II B.Sc., -Horticulture-III / III Semester End (W.E.F. 2019-20)
OLERICULTURE
HORTICULTURE PAPER -III QUESTION BANK (SEMESTER-III)

UNIT – 1

5 Marks Questions

1. Seed production in Tomato
2. Resistant varieties in Tomato leaf curl disease
3. Physiological disorders of Tomato
4. Physiological disorders of chilly

10 Marks Questions

1. Production technology of tomato
2. Production technology of brinjal
3. Production technology of capsicum

UNIT – 2

5 Marks Questions

3. Importance or utility of Amaranthus
4. Sex expression in spinach
5. Different groups of leafy vegetables

10 Marks Questions

1. Production technology of Amaranthus
2. Production technology of spinach
3. Production technology of coriander

UNIT – 3

5 Marks Questions

3. Physiological disorders of carrot
4. Physiological disorders of beetroot
5. Propagation techniques in sweet potato
6. Explain classification of carrot with examples

10 Marks Questions

1. Production technology of colocasia
2. Production technology of sweet potato
3. Production technology of carrot
4. Production technology of beetroot

UNIT – 4

5 Marks Questions

1. Physiological disorders of cauliflower
2. Seed production in cabbage

10 Marks Questions

1. Production technology of cabbage
2. Production technology of cauliflower

UNIT – 5

5 Marks Questions

1. Explain climate and soil conditions of dolichos and double bean
2. Important varieties of cowpea and cluster bean

10 Marks Questions

1. Production technology of cluster bean
2. Production technology of cowpea

PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA
II B.Sc-HORTICULTURE-IV / IV Semester End (W.E.F. 2019-20)
ORNAMENTAL HORTICULTURE, FLORICULTURE AND LANDSCAPING
(COURSE: HORT4222)

Total hours of Teaching 60hrs @ 4 hrs per week

Total Credits:03

UNIT-I: LEAFY AND FLOWER ORNAMENTALS (12h)

1. Introduction and classification of ornamentals.
2. Different types of leafy ornamentals.
3. Different types of flower ornamentals.
4. Commercial value of ornamentals in India and abroad.

UNIT-II: FUNDAMENTALS OF LANDSCAPING (12h)

1. Principles, importance and scope of landscaping.
2. History, art principles, important terms of landscape gardening; garden adornments.
3. Garden features: wall, fencing, steps, garden, lawn, carpet bedding; flower beds, water gardens, bonsai.
4. Garden types and styles: Indoor and outdoor gardens; Formal, informal, free style, special type, terrace, rock and sunken garden styles.

UNIT-III: CULTIVATION OF ORNAMENTALS (12h)

1. Importance, description, cultivation and use of annuals; biennials, herbaceous perennials, woody perennials.
2. Identification, classification and growth habits of ornamental trees, shrubs and climbers used for various purposes.
3. Cacti and succulents, ferns, palms and foliage plants.
4. Flower shows, judging. Flower arrangements. Growing of flowers for exhibitions and competitions.

UNIT-IV: COMMERCIAL FLORICULTURE (12h)

1. Scope and importance of commercial floriculture in India
2. Cultivation of Rose, Jasmine, Chrysanthemum and Marigold
3. Cultivation of Tuberose, Aster and Dahlia
4. Cultivation of Gerbera, Gladiolus

UNIT-V: MANAGEMENT PRACTICES FOR ORNAMENTAL PLANTS (12h)

1. Plant protection; use of Plant Growth Regulators.
2. Special horticultural practices.
3. Harvesting and post-harvest handling.
4. Grading, packing, storage and marketing of ornamental flowers.

PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA
II B.Sc-HORTICULTURE-IV / IV Semester End (W.E.F. 2019-20)
HORTICULTURE PRACTICAL SYLLABUS

ORNAMENTAL HORTICULTURE, FLORICULTURE AND LANDSCAPING

Total hours of laboratory Exercises 30 hrs @ 2 per week

Total credits:02

SEMESTER-IV PRACTICAL SYLLABUS

1. Identification, classification and description of annuals, herbaceous perennials, bulbous plants, cacti and succulents, foliage plants, ferns and palms.
2. Bonsai culture and flower arrangements.
3. Identification of garden components, lawn, annuals, shrubs, climbers, creepers, cactus, succulents, trees with specialized gardens, line roof garden, Japanese garden.
4. Visit to floriculture farms
5. Visit to different gardens to observe landscaping components and styles.

Suggested Readings:

- ❖ Das P, G Maiti and R S Duha (1999) Floriculture and Landscaping P Sales Pvt.Ltd.
- ❖ Sabina, GT and Peter KV. 2008. Ornamental Plants for Gardens. New India Publ. Agency.
- ❖ Lauria A and Victor HR. 2001. Floriculture – Fundamentals and Practices Agro bios.
- ❖ Nambisan KMP.1992. Design Elements of Landscape Gardening. Oxford IBH.

PRACTICAL MODEL PAPER:

1. Major Experiment	-	15 Marks
2. Minor	-	10 Marks
3. Record and Viva	-	10 Marks

Total	-	35 Marks
CCA	-	15 Marks

TOTAL MARKS	-	50 Marks

PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA
II Year B.Sc., Degree Examinations at IV Semester End
Horticulture Paper IV: ORNAMENTAL HORTICULTURE, FLORICULTURE AND
LANDSCAPING

(Course: HORT4222 Model Question Paper w.e.f. 2019-20)

Time: 2½ Hrs.

Max. Marks: 60

Section – A

3x10 = 30

Answer any **Three** of the following questions. Draw neat and labeled diagrams wherever necessary.

1. Value chain analysis of ornamentals in India and abroad
2. Post-harvest practices in ornamental plants
3. Classification of rose
4. Principles, importance and scope of landscaping
5. Explain Ikebana

Section –B

6x5 = 30

Answer any **Six** of the following questions. Draw diagrams wherever necessary

6. Classification of ornamental plants
7. Leafy ornamentals with examples
8. Basic principles of gardening
9. Non plant garden components
10. Principles and elements of flower arrangements
11. Brief notes on herbaceous border
12. Importance and uses of marigold
13. Special horticultural practices in ornamental plants
14. Extraction methods of jasmine
15. Methods of storage of cut flowers

BLUE PRINT FOR QUESTION SETTER

Unit no. / Title	SAQ	LAQ	Marks allotted to the Module
Unit – 1/ Leafy and flower ornamentals	2	1	20
Unit – 2/ Fundamentals of Landscaping	2	1	20
Unit – 3/ Cultivation of Ornamentals	2	1	20
Unit – 4/ Commercial floriculture	2	1	20
Unit – 5/ Management practices for ornamental plants	2	1	20
Total marks allotted to all questions including choice =			100

Note: Question paper setters are requested to adhere strictly to the above blue print while preparing the said paper

PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA
II B.Sc., -Horticulture-IV / IV Semester End (W.E.F. 2019-20)
ORNAMENTAL HORTICULTURE, FLORICULTURE AND LANDSCAPING
HORTICULTURE PAPER -IV QUESTION BANK (SEMESTER-IV)

UNIT – 1

5 Marks Questions

1. Classification of ornamental plants
2. Leafy ornamentals with examples
3. Flower ornamentals with examples

10 Marks Questions

1. Value chain analysis of ornamentals in India and abroad

UNIT – 2

5 Marks Questions

1. Basic principles of gardening
2. Types of garden with examples
3. Features of landscaping
4. Non plant garden components
5. Garden adornments

10 Marks Questions

1. Brief notes on garden styles
2. Special types of garden
3. Principles, importance and scope of landscaping

UNIT – 3

5 Marks Questions

1. Principles and elements of flower arrangements
2. Classification of ornamental trees with examples
3. Brief notes on herbaceous border
4. Purpose of planting trees
5. Explain biennials and perennials

10 Marks Questions

1. Explain Ikebana
2. Western flower arrangements
3. Annuals and its management

UNIT – 4

5 Marks Questions

1. Cultural practices to improve rose quality
2. Propagation of roses
3. Training in chrysanthemum
4. Extraction methods of jasmine
5. Importance and uses of marigold
6. Classification of asters

10 Marks Questions

1. Classification of rose
2. Production technology of rose
3. Scope and importance of commercial floriculture in India
4. Production technology of gerbera
5. Classification of Dahlia
6. Production technology of dahlia

UNIT – 5

5 Marks Questions

1. Special horticultural practices in ornamental plants
2. Plant growth regulators
3. Methods of storage of cut flowers

10 Marks Questions

1. Post harvest practices in ornamental plants
2. Pre harvest factors influencing post-harvest life

P R GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA

The **Board of Studies in B.Sc Horticulture** for the Academic year 2019-2020 held in April 2019 in Dept. of Botany, Microbiology & Horticulture, PRGC(A), Kakinada.

AGENDA:

The Board of Studies of a Department in the college shall:

1. Adopting affiliated University syllabus for I to IV Semesters
2. Adopting 60- External evaluation and 40- Internal evaluation for all Semesters for the Academic year 2019-20.
3. Conduct of Semester End Practical examinations for Ist & IInd Year
4. Approval of MCQ for I Year Students
5. Approval of conversion of teaching method for some practical oriented topics through audio & video visuals
6. Approval of student online courses including faculty for the year 2019-20.

The members of B.O.S in Botany discussed all the issues kept in agenda at length and taken following resolutions.

RESOLUTIONS:

1. The Chairperson submitted the syllabus for Horticulture which was adopted from the Adikavi Nannaya University from the Academic year 2019-2020
2. Resolved to adopt 60 External, 40 Internal evaluations for all 3 Years students.
3. Resolved to conduct practical for all semesters
4. Resolved to change Practical into 50 Marks Project
5. Resolved to conduct MCQ pattern Mid examination for I Semester only which is in online mode.

Smt T.KALPANA
Lecturer in-Charge
Dept. of Horticulture
PRGC(A),
Kakinada

Dr. S. SAI DURGA PRASAD,
Principal
K.G.R.L College (A),
Bhimavaram, West Godavari District
Mobile: 9948411470
E-Mail: durgaprasad23@gmail.com

Dr. A.SRINIVASA RAO,
Lecturer in charge of Botany,
Govt. Degree college, Mandapeta.
Mobile: 8309843949
E-Mail: drannabattulasrao@gmail.com

Smt. P.S.S.KRISHNA KUMARI
Lecturer in Botany
ASD Women's College
Kakinada, EG Dist.
Mobile: 9121830415
Email: pullelakk21@gmail.com

Prof. B.V.RAGHAVA RAO
Former Dean Horticulture
Horticultural University
Pedavegi

Dr. D R SALOMI SUNEETHA
Professor & Head
Plant Physiology, Biochemistry &
Microbiology Dept.
College of Horticulture
Dr YSR Horticultural University
Venkatramannagudem-534101
W G Dist
Mobile: 9491608088
Email: salomibiochem@gmail.com

B.V.RAMANA
Assistant Director
Dept. of Horticulture
Kakinada
Mobile: 8333835469
Email: adhkakinada@gmail.com

Faculty members:

- 1. Smt. P.SARA**
Lecturer in Botany(Regular)
- 2. B.RAJA RAJESWARI**
Contract Faculty in Botany
- 3. S.BHARATHI DEVI**
Guest Faculty in Horticulture
- 4. V. ANITHA**
Guest Faculty in Botany
- 5. G. SRAVANI**
Guest Faculty in Botany