

# **BOARD OF STUDIES IN B.Sc HORTICULTURE 2021-2022**

**DEPARTMENT OF BOTANY 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 and Horticulture**

The Board of Studies meeting for Horticulture subject during the academic year 2021-2022 is conducted at the Dept. of Botany & Horticulture on Nov-2021 with Dr.Ch.John Samuel, Lecturer in-Charge in the chair along with the following members.

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**Name, Designation and Address**

**Signature**  
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**1. CHAIR PERSON:**

**Dr. Ch.JOHN SAMUEL**  
Lecturer in-Charge  
Dept. of Botany & Horticulture  
PRGC(A), Kakinada

**2. ADIKAVI NANNAYA UNIVERSITY NOMINEE:**

**Dr. J.SUNITHA,**  
Principal  
GDC Kovvur  
Mobile: 9441050910  
E-mail: drjsuneetha@gcrjy.ac.in

**3. MEMBERS NOMINATED BY EXECUTIVE COUNCIL OF THE COLLEGE:**

**a. INDUSTRIAL EXPERT**

**Dr. K.V.V.G.K.VARA PRASAD**  
Lecturer in Botany  
GDC(A), Tuni  
Mobile: 9908876727  
E-mail: prasadkommula03@gmail.com

**b. SUBJECT EXPERT 1:**

**Dr. G.JYOTHIRMAYI**  
Lecturer in Botany  
GDC(A), Rajamahendravaram  
Mobile: 7989171117  
E-mail: drgjbotanymr@gmail.com

**c. SUBJECT EXPERT 2:**

**Smt P.SWATHI**  
Assistant Director,  
Biological Control Laboratory  
Dept. of Agriculture, Kakinada  
Mobile: 9848350962  
E-Mail: swathi3002@yahoo.com

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**Name, Designation and Address**  
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**Signature**

**d. ALUMNI MEMBER:**

**Dr. D R SALOMI SUNEETHA**

Professor & Head

Plant Physiology, Biochemistry & Microbiology Dept.

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. SARA PALAPARTHY**

Lecturer in Botany

PRGC(A), Kakinada

**2. P.NICEE**

Guest Faculty in Horticulture

**b. STUDENT MEMBERS:**

- |                  |            |
|------------------|------------|
| 1. Mr.Rupesh     | III HBC-EM |
| 2. Ms.Sunandha   | III HBC-EM |
| 3. Mr.Sai Charan | III HBC-EM |
| 4. Ms.Sowshita   | III HBC-EM |

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

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

**PROGRAMME OUTCOMES FOR HORTICULTURE(PO)**

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 (PSO):**

- 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, bendhi, brinjal, chilli

Bulb Crops- Protected Cultivation Onion

## **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.

**SEMESTER-V CONCEPTS OF POMOLOGY**

**UNIT -1: INTRODUCTION TO FRUIT CROPS**

**Objectives**

To study the importance and nutritive value of fruit crops.

**Learning outcome**

Student will know about area and production of fruit crops in India and Andhra Pradesh.

**UNIT-2: TROPICAL FRUITS**

**Objectives**

To study the cultivation practices followed in Mango, guava, and papaya.

**Learning outcome**

Student will know about the soil, climate, varieties, land preparation, spacing, layout, planting, intercultural operations, fertilizer application, irrigation, pest and diseases, harvesting of Mango, Guava, and papaya.



### **UNIT-3: SUB TROPICAL AND TEMPERATE FRUITS**

#### **Objectives**

To study the cultivation practices of Grapes, pomegranate and Apple.

#### **Learning outcome**

Student will know about the soil, climate, varieties, land preparation, spacing, layout, planting, intercultural operations, fertilizer application, irrigation, pest and diseases, harvesting of Grapes, Pomegranate, and apple.

### **UNIT-4: ARID AND MINOR FRUIT CROPS**

#### **Objectives**

To study the cultivation practices of Amla, Ber, Bael and Wood apple.

#### **Learning outcome**

Student will know about the soil, climate, varieties, land preparation, spacing, layout, planting, intercultural operations, fertilizer application, irrigation, pest and diseases, harvesting of Amla, Ber, Bael and Wood apple.

### **UNIT-5: MANAGEMENT PRACTICES FOR FRUIT CROPS**

#### **Objectives**

To study the integrated orchard management.

#### **Learning outcome**

Student will know about the production practices and storage and transport of local fruits.

## **SEMESTER -V: DISEASES OF HORTICULTURE PLANTS AND THEIR MANAGEMENT**

### **UNIT -1: DISEASES OF VEGETABLE CROPS**

#### **Objectives**

To study the diseases in vegetable crops.

#### **Learning outcome**

Student will know about various diseases in vegetable crops like Brinjal, tomato and chilly.

### **UNIT – 2: DISEASES OF ORNAMENTAL CROPS**

#### **Objectives**

To study the diseases in Ornamental crops.

#### **Learning outcome**

Student will know about various diseases in ornamental crops like Rose, chrysanthemum, jasmine, marigold, tuberose and gladiolus.

### **UNIT-3: DISEASES OF FRUIT CROPS**

#### **Objectives**

To study the diseases in fruit crops

#### **Learning outcome**

Student will know about various diseases in fruit crops like Mango, grape, papaya and citrus.

### **UNIT-4: INTEGRATED PEST AND DISEASE MANAGEMENT**

#### **Objectives**

To study the integrated management of pest and diseases.

#### **Learning outcome**

Student will know about chemical nature, use, methods of application, toxicity, maximum residue level in pesticide and pesticide management.

### **UNIT-5: PESTICIDES**

#### **Objectives**

To study the integrated pest and diseases management in fruits, vegetables, flower, medicinal and plantation crops.

#### **Learning outcome**

Student will know about insect pests and nematode pests in horticultural crops and their management.

## **SEMESTER-VI: PROTECTED CULTIVATION OF HORTICULTURAL CROPS**

### **UNIT -1: PROTECTED STRUCTURES**

#### **Objectives**

To study the scope and information of growing vegetable crops in protected structures

#### **Learning outcome**

Student will know about regulation of climatic factors like temperature, relative humidity, CO<sub>2</sub> and light in protected structures.

### **UNIT – 2: AGRICULTURE FINANCE AND MANAGEMENT**

#### **Objectives**

To study the loans and credit related to Agriculture.

#### **Learning outcome**

Student will know about sources of Agriculture finance and principles of farm credit.

### **UNIT-3: NURSERY PRODUCTION**

#### **Objectives**

To study the nursery raising in protected structures.

#### **Learning outcome**

Student will know about types of benches and containers and different media for growing nursery.

### **UNIT-4: CULTIVATION OF HORTICULTURAL CROPS IN PROTECTED WAYS**

#### **Objectives**

To study the intercultural operations to promote yield in protected structures

#### **Learning outcome**

Student will know about training and staking vegetable crops, regulation of flowering and fruiting in horticultural crops.

### **UNIT-5: CROP PROTECTION**

#### **Objectives**

To study the recognition and management of disorders, diseases, pests and weeds.

#### **Learning outcome**

Student will know about use, handling, transport storage of plant protection chemicals.

## **SEMESTER-VI: HORTICULTURE EXTENSION AND VALUE ADDED PRODUCTS**

### **UNIT -1: BASICS OF HORTICULTURE EXTENSION**

#### **Objectives**

To study the scope and principles of extension education.

#### **Learning outcome**

Student will know about transfer of technology programe. Scope and importance of participatory rural appraisal and rapid rural appraisal.

### **UNIT – 2: COMMUNICATION AND PROGRAME PLANNING**

#### **Objectives**

To study the communication and barriers in communication.

#### **Learning outcome**

Student will know about programme planning and evaluation of extension programmes.

### **UNIT-3: MODERN COMMUNICATION GADGETS**

#### **Objectives**

To study the modern communication sources.

#### **Learning outcome**

Student will know about internet, videos and tele conferencing, kisan call centre and mobile phone.

#### **UNIT-4: PROCESSING AND VALUE ADDITION**

##### **Objectives**

To study the preservation of fruits and vegetables by using sugar, salt, dehydration process and canning.

##### **Learning outcome**

Student will know about the preparation of jams, jellies, marmalade, squash, RTS, nectar, fruit bars, preserves and candies, pickles and sauces.

#### **UNIT-5: PRINCIPLES OF PRESERVATION**

##### **Objectives**

To study the preservation of fruits and vegetables by low temperature

##### **Learning outcome**

Student will know about preservation by irradiation and freezing

### **SEMESTER-VI: MEDICINAL PLANTS AND PLANTATION CROPS**

#### **UNIT -1: PLANTATION CROPS-1**

##### **Objectives**

To study the cultivation practices of coconut, oil palm and cocoa.

##### **Learning outcome**

Student will know about soil, climate, varieties, land preparation, spacing, planting, intercrops, intercultural operations, fertilizer application, irrigation, pest and diseases and harvesting of Coconut, oil palm and cocoa crops.

#### **UNIT – 2: PLANTATION CROPS-2**

##### **Objectives**

To study the cultivation practices of Cashewnut and Coffee.

##### **Learning outcome**

Student will know about soil, climate, varieties, land preparation, spacing, planting, intercrops, intercultural operations, fertilizer application, irrigation, pest and disease and harvesting of cashewnut and coffee.

#### **UNIT-3: MEDICINAL CROPS-1**

##### **Objectives**

To study the cultivation practices of Aloe, Ravolfia, morinda and citronella.

##### **Learning objectives**

Student will know about soil, climate, land preparation, spacing, planting, intercultural operations, fertilizer application, irrigation, pest and disease and harvesting of Aloe, Ravolfia, morinda and citronella

#### **UNIT-4: MEDICINAL CROPS-2**

##### **Objectives**

To study the cultivation practices of Citronella, lemongrass and Mint.

##### **Learning objectives**

Student will know about soil, climate, land preparation, spacing, planting, intercultural operations, fertilizer application, irrigation, pest and disease and harvesting of Citronella, lemon grass, and Mint.

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

**HORTICULTURE COURSE STRUCTURE AND SYLLABUS**

YEAR	SEMESTER	PAPER	PAPER TITLE	MARKS	CREDITS
I YEAR	I	I	BASIC CONCEPTS OF HORTICULTURE AND SOIL SCIENCE	50+50	3
		I	PRACTICAL	35+15	2
	II	II	PLANT PROPAGATION METHODS AND NURSERY MANAGEMENT	50+50	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	PROTECTED CULTIVATION OF HORTICULTURAL CROPS	60+40	3
		VII ELECTIVE	PRACTICAL	35+15	2
		VIII-A-1	HORTICULTURE EXTENSION AND VALUE ADDED PRODUCTS	60+40	3
		VIII-A-1	PRACTICAL	35+15	2
		VIII-A-2	MEDICINAL AND PLANTATION CROPS	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 & 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 Questions	Total marks	No. of Questions	Marks Allotted to each Questions	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	20
<b>Total Questions &amp; Total Marks =</b>		<b>15</b>	<b>-</b>	<b>100</b>	<b>9</b>	<b>-</b>	<b>60</b>

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

**PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA**  
**I B.Sc-HORTICULTURE-I / I Semester End (W.E.F. 2020-21)**  
**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.
5. Minerals and Weathering to Form Soils; Factors of Soil Formation.
6. Soil components-Minerals, Organic matter, soil solution, soil air

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

Soil reaction, Soil Colloids, soil classification, Problematic soils, Soil organic matter with the source of nutrients

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

1. Nutrition- Meaning , Macro and Micro nutrients and their in plant growth ,Deficiency symptoms
2. Biological nitrogen fixation ,Manures and fertilizers
3. Integrated nutrient management

**PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA**  
**I B.Sc-HORTICULTURE-I / I Semester End (W.E.F. 2020-21)**  
**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.

**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:**

<b>1. Major Experiment</b>	-	<b>15 Marks</b>
<b>2. Minor</b>	-	<b>10 Marks</b>
<b>3. Record and Viva</b>	-	<b>10 Marks</b>
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<b>Total</b>	-	<b>35 Marks</b>
<b>CCA</b>	-	<b>15 Marks</b>
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<b>TOTAL MARKS</b>	-	<b>50 Marks</b>
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**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. 2020-21)**

**Time: 2<sup>1</sup>/<sub>2</sub> Hrs.**

**Max. Marks: 50**

**PART-1**

**3×10 =30M**

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

**SECTION -A**

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

**SECTION –B**

1. Soil Components
2. Write an essay on nutrition value of Horticultural crops with examples
3. Explain types of Soil Structures.

**PART-II**

**4x5 = 20**

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

1. Horticulture zones of Andhra Pradesh and India
2. Export and import trade in horticulture
3. Chemical properties of soil
4. Micro climate
5. Soil physical constraints
6. Properties of soil colloids

**BLUE PRINT FOR QUESTION SETTER**

Unit no. / Title	SAQ	LAQ	Marks allotted to the Module
Unit – 1/ Introduction to Horticulture	1	1	15
Unit – 2/ Classification and Nutritional value of Horticultural crops	1	1	15
Unit – 3/ Environmental factors – Horticultural crops	2	2	30
Unit – 4/ Soil as a medium for plant growth	2	2	30
Unit – 5/ Mineral nutrition of plants	06	06	
Total marks allotted to all questions including choice =			90

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. 2020-21)**  
**BASIC CONCEPTS OF HORTICULTURE AND SOIL SCIENCE**  
**HORTICULTURE PAPER -1 QUESTION BANK (SEMESTER-1)**

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**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. Classification of soil
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 components
2. Soil organic matter

**PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA**  
**I B.Sc-HORTICULTURE-II / II Semester End (W.E.F. 2020-21)**  
**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. Micro propagation ,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-, patches 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. 2020-21)**  
**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:**

<b>1. Major Experiment</b>	-	<b>15 Marks</b>
<b>2. Minor</b>	-	<b>10 Marks</b>
<b>3. Record and Viva</b>	-	<b>10 Marks</b>
		-----
<b>Total</b>	-	<b>35 Marks</b>
<b>CCA</b>	-	<b>15 Marks</b>
		-----
<b>TOTAL MARKS</b>	-	<b>50 Marks</b>
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**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. 2020-21)

**Time: 2½ Hrs.**

**Max. Marks: 50**

**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**

**4x5 = 20**

**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. 2020-21)**  
**PLANT PROPAGATION METHODS AND NURSERY MANAGEMENT**  
**HORTICULTURE PAPER -II QUESTION BANK (SEMESTER-II)**

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**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. 2021-22)**  
**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 Chilli

**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 BULB 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
- d. Cultivation of Onion

**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
- c. Cucurbitaceae- Bitter guard, bottle guard, Ridge guard

**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. 2021-22)**  
**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
10. Special Cultural crops horticulture in vegetable crops
11. Irrigation requirements for different vegetable crops
12. Harvesting indices for indices
13. Indices for different vegetable crops
14. Physical disorders, factors and parameters for important crops

**Suggested Readings:**

- Bose T K et al. (2003) Vegetable crops, Naya Udhyog 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
		-----
<b>TOTAL MARKS</b>	-	<b>50 Marks</b>
		-----

**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. 2021-22)**

**Time: 2 1/2 Hrs.**

**Max. Marks: 60**

**SECTION – A**

**3X10 = 30M**

**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 = 30M**

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

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

**BLUE PRINT FOR QUESTION SETTER**

<b>Unit no. / Title</b>	<b>SAQ</b>	<b>LAQ</b>	<b>Marks allotted to the Module</b>
Unit – 1	2	1	20
Unit – 2	2	1	20
Unit – 3	2	1	20
Unit – 4	2	1	20
Unit – 5	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. 2021-22)**  
**OLERICULTURE**  
**HORTICULTURE PAPER -III QUESTION BANK (SEMESTER-III)**

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**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

1. Importance or utility of Amaranthus
2. Sex expression in spinach
3. 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

1. Physiological disorders of carrot
2. Physiological disorders of beetroot
3. Propagation techniques in sweet potato
4. 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. 2021-22)**  
**ORNAMENTAL HORTICULTURE, FLORICULTURE AND LANDSCAPING**  
**(COURSE: HORT4222)**

**Total hours of Teaching 60hrs @ 4 hrs per week**

**Total Credits:03**

**UNIT-I: FOLIAGE AND FLOWERING 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: GARDEN TYPES – INDOOR AND OUTDOOR (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: GARDEN AND LAWN TYPES MANAGEMENT (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: FLOWER SHOWS, JUDGING, FLOWER ARRANGEMENT (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
5. Commercial- Orchids, Anthurium

**UNIT-V: ORNAMENTAL AND FLOWER CROPS (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.
5. Carnation- Gerbera, Gladiolus

**PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA**  
**II B.Sc-HORTICULTURE-IV / IV Semester End (W.E.F. 2021-22)**  
**HORTICULTURE PRACTICAL SYLLABUS**  
**ORNAMENTAL HORTICULTURE, FLORICULTURE AND LANDSCAPING**  
**Total hours of laboratory Exercises 30 hrs @ 2 per week** **Total credits:02**

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**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
		-----
<b>TOTAL MARKS</b>	-	<b>50 Marks</b>
		-----

**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. 2021-22)

**Time: 21/2 Hrs.**

**Max. Marks: 60**

**SECTION – A**

**3X10 = 30M**

**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 = 30M**

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

1. Classification of ornamental plants
2. Leafy ornamentals with examples
3. Basic principles of gardening
4. Non plant garden components
5. Principles and elements of flower arrangements
6. Brief notes on herbaceous border
7. Importance and uses of marigold
8. Special horticultural practices in ornamental plants
9. Extraction methods of jasmine
10. 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

**PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA**  
**III B.Sc., -Horticulture-IV / IV Semester End (W.E.F. 2021-22)**  
**ORNAMENTAL HORTICULTURE, FLORICULTURE AND LANDSCAPING**  
**HORTICULTURE PAPER -IV QUESTION BANK (SEMESTER-IV)**

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**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

**PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA**  
**III B.Sc-HORTICULTURE-V / V Semester End (W.E.F. 2021-22)**  
**CONCEPTS OF POMOLOGY**  
**(COURSE: HORT5222)**

**Total hours of Teaching 60hrs @ 4 hrs per week**

**Total Credits:03**

**UNIT-I: INTRODUCTION TO FRUIT CROPS (10 HRS.)**

1. Importance of growing fruit crops in India and Andhra Pradesh.
2. Nutritive value of fruits.
3. Area and production of fruit crops in Andhra Pradesh and India
4. Export and import potential of fruits in India. Constraints in fruit production and remedies to overcome them.
5. Banana
6. Citrus- Lemon

**UNIT – 2: TROPICAL FRUIT CROPS (12 Hrs.)**

Origin, history, distribution, area and production, uses and composition, varieties, soil and climatic requirements, propagation, planting, training and pruning, manuring and fertilizer application, irrigation, intercropping, harvesting and yield, diseases and pests of the following tropical fruit crops:

1. Mango
2. Guava
3. Papaya
4. Strawberry
5. Fig

**UNIT – 3: SUB-TROPICAL AND TEMPERATE FRUIT CROPS (12 Hrs.)**

Origin, history, distribution, area and production, uses and composition, varieties, soil and climatic requirements, propagation, planting, training and pruning, manuring and fertilizer application, irrigation, intercropping, harvesting and yield, diseases and pests of the following sub-tropical and temperate fruit crops:

1. Grapes
2. Pomegranate
3. Apple

**UNIT – 4: ARID AND MINOR FRUIT CROPS (16 Hrs.)**

Origin, history, distribution, area and production, uses and composition, varieties, soil and climatic requirements, propagation, planting, training and pruning, manuring and fertilizer application, irrigation, inter cropping, harvesting and yield, diseases and pests of the following arid fruit crops:

1. Amla
2. Ber
3. Bael
4. Wood apple

**UNIT – 5: MANAGEMENT PRACTICES FOR FRUIT CROPS (10 Hrs.)**

1. Sustainable Production Practices for Local Fruit Production
2. Integrated Orchard Management/Principles of Integrated Pest Management.
3. Harvesting and Labor Concerns
4. Grading, packing, storage and marketing of fruits.

**PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA**  
**III B.Sc-HORTICULTURE-V / V Semester End (W.E.F. 2021-22)**  
**HORTICULTURE PRACTICAL SYLLABUS**  
**CONCEPTS OF POMOLOGY**

**Total hours of laboratory Exercises 30 hrs @ 2 per week**

**Total credits:02**

**SEMESTER-V PRACTICAL SYLLABUS**

1. Study of varieties of Mango and Banana.
2. Study of varieties of Grape and Citrus.
3. Study of varieties of Papaya and Guava.
4. Manure and fertilizer application including bio fertilizers in different fruit crops
5. Methods of application, calculation of the required quantity of manure and
6. fertilizers based on the nutrient content.
7. Study of varieties of Pomegranate, Custard apple and Ber
8. Study of varieties of Apple.
9. Study of varieties of minor fruit crops.
10. Use of growth regulators in fruit crops.
11. Identification and collection of important pests in fruit crops.
12. Identification and collection of important diseases in fruit crops and Herbarium
13. preparation.
14. 12. Visit to a fruit market/commercial orchids.
15. 13. Physiological disorders of fruit crops

**Suggested readings:**

- Chattopadhyay, T.K.1997. Text book on Pomology (Fundamentals of fruit growing), Kalyani Publishers, Hyderabad.
- Chundawat, B.S. 1990. Arid Fruit Culture, Oxford and IBH, New Delhi.
- Gourley J H 2009. Text book of Pomology, Read Books Publ.

**PRACTICAL MODEL PAPER:**

1. Major Experiment	-	15 Marks
2. Minor	-	10 Marks
3. Record and Viva	-	10 Marks
		-----
Total	-	35 Marks
CCA	-	15 Marks
		-----
<b>TOTAL MARKS</b>	<b>-</b>	<b>50 Marks</b>
		-----

**PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA**  
**III Year B.Sc., Degree Examinations at V Semester End**  
**Horticulture Paper V: CONCEPTS OF POMOLOGY**  
**(Course: HORT5222 Model Question Paper w.e.f. 2021-22)**

**Time: 21/2 Hrs.**

**Max. Marks: 60**

**SECTION – A**

**3X10 = 30M**

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

1. Area and production of fruit crops in Andhra Pradesh and India.
2. Production technology of Mango.
3. Production technology of Pomegranate.
4. Production technology of Amla.
5. Production technology of Fig

**SECTION – B**

**6X5 = 30M**

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

1. Importance of fruit crops.
2. Varieties of Mango.
3. Training and pruning in grapes.
4. Constraints in fruit crops and remedies to overcome them in India.
5. Sex determination and pollination in Papaya.
6. Harvesting indices in pomegranate and apple.
7. Importance of Amla.
8. Production methods in Bael.
9. Post-harvest practices of fruit crops.
10. Marketing of fruit crops.

**BLUE PRINT FOR QUESTION SETTER**

Unit no. / Title	SAQ	LAQ	Marks allotted to the Module
Unit – 1	2	1	20
Unit – 2	2	1	20
Unit – 3	2	1	20
Unit – 4	2	1	20
Unit – 5	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**  
**III B.Sc., -Horticulture-V / V Semester End (W.E.F. 2021-22)**  
**CONCEPTS OF POMOLOGY**  
**HORTICULTURE PAPER -V QUESTION BANK (SEMESTER-V)**

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**UNIT – 1**

5 Marks Questions

1. Importance of growing fruit crops.
2. Nutritive value of fruits.
3. Constraints in fruit production and remedies to overcome them.

10 Marks Questions

1. Area and production of fruit crops in Andhra Pradesh and India.
2. Export and import of fruit crops in India.

**UNIT – 2**

5 Marks Questions

1. Varieties of Mango.
2. Sex determination and pollination in papaya.
3. Pest and diseases management of strawberry

10 Marks Questions

1. Production technology of Mango
2. Production technology of Guava.
3. Production technology of Fig

**UNIT – 3**

5 Marks Questions

1. Training and pruning in grapes.
2. Harvesting indices of pomegranate and Apple.

10 Marks Questions

1. Production technology of pomegranate.

**UNIT – 4**

5 Marks Questions

1. Importance of Amla
2. Cultural practices in wood apple.

10 Marks Questions

1. Production technology of Amla.
2. Production technology of Ber.

**UNIT-V**

5 MARKS

1. Post-harvest practices of fruits.
2. Marketing of fruits.

10 MARKS

1. Integrated pest management in fruit crops.

**PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA**  
**III B.Sc-HORTICULTURE-VI / V Semester End (W.E.F. 2021-22)**  
**DISEASES OF HORTICULTURE PLANTS AND THEIR MANAGEMENT**  
**(COURSE: HORT6222)**

**Total hours of Teaching 60hrs @ 4 hrs per week**

**Total Credits:03**

**UNIT – 1: Diseases of Vegetable Crops-Basic technology concept of plant diseases and its management Symptoms of viral diseases. (10 Hrs.)**

1. Brinjal: Wilt, Phomopsis blight, Sclerotinia foot rot, Little leaf of Brinjal
2. Tomato: Late blight, early blight, leaf curl
3. Chilly: Anthracnose, leaf curl

**UNIT – 2: DISEASES OF COMMERCIAL FLOWER CROPS (16Hrs.)**

1. Rose: dieback, black spot
2. Chrysanthemum: Septoria leaf spot, Basal stem rots
3. Jasmine: Leaf blight, Rust
4. Gerbera: Blossom blight, powdery mildew

**UNIT – 3: DISEASES OF FRUIT CROPS (12 Hrs.)**

1. Mango: Malformation, Anthracnose, Black tip
2. Papaya: Papaya mosaic, Papaya ring spot, Papaya leaf curl
3. Citrus: Canker, root rot

**UNIT – 4: INTEGRATED PEST AND DISEASE MANAGEMENT (12 Hrs.)**

1. Pesticide classification on use, chemical nature, formulation, toxicity and action.
2. Pesticide Dissipation, Residue Dynamics, Different methods/ Steps in residue analysis.
3. Maximum Residue Levels in pesticide
4. Pesticide Management.

**UNIT – 5: PESTICIDES (10 Hrs.)**

1. Integrated Pest and Disease Management practices in Fruits, Vegetables, Flower crops, Medicinal and Plantation crops.
2. Insect pests in horticulture crops and their management.

**PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA**  
**III B.Sc-HORTICULTURE-V / V Semester End (W.E.F. 2021-22)**  
**HORTICULTURE PRACTICAL SYLLABUS**  
**DISEASES OF HORTICULTURE PLANTS AND THEIR MANAGEMENT**  
**Total hours of laboratory Exercises 30 hrs @ 2 per week** **Total credits:02**

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**SEMESTER-V PRACTICAL SYLLABUS**

1. Field visit and acquaintance with diseases of crops
2. Study of pathogens where possible; important diseases are:
  - a. Late blight of Potato
  - b. Wilt of Tomato
  - c. Anthracnose of beans
  - d. Powdery mildew of pea
  - e. Rhizome rot of Ginger
  - f. Stem gall of coriander
  - g. Powdery mildew
  - h. Downy mildew of cucurbits
  - i. Rust of onion and garlic
  - j. Dieback of Rose
3. Acquaintance with common fungicides and their methods of application.

**Suggested readings:**

- Verma L R and R C Sharma 1999. Diseases of Horticultural Crops – Fruits, Indus Publishing, New Delhi.
- Diseases of Horticulture Crops and their management, TNAU Publ. Agrimoon.Com
- Jagatap G P, D N Dhutraj and UtpalDey. 2001. Diseases of Horticultural crops and their management, Agro bios Publications

**PRACTICAL MODEL PAPER:**

1. Major Experiment	-	15 Marks
2. Minor	-	10 Marks
3. Record and Viva	-	10 Marks
		-----
Total	-	35 Marks
CCA	-	15 Marks
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<b>TOTAL MARKS</b>	-	<b>50 Marks</b>
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**PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA**  
**III Year B.Sc., Degree Examinations at V Semester End**  
**Horticulture Paper VI: DISEASES OF HORTICULTURE PLANTS AND THEIR**  
**MANAGEMENT**

(Course: HORT5222 Model Question Paper w.e.f. 2021-22)

**Time: 21/2 Hrs.**

**Max. Marks: 60**

**SECTION – A**

**3×10 =30M**

**Answer any THREE of the following questions, draw neat and labeled diagrams wherever necessary**

1. Diseases and their management Tomato.
2. Discuss briefly on diseases and their management in cut flowers.
3. Diseases and their management in Mango.
4. Chemical nature, formulation, toxicity and action of pesticides.
5. Nematode pests in horticultural crops and their management.

**SECTION – B**

**6X5 = 30M**

**Answer any SIX of the following Questions, draw neat and labeled diagrams wherever necessary**

1. Little leaf of brinjal.
2. Leaf blight in tomato.
3. Leaf blight disease in jasmine
4. Black spot disease in Rose.
5. Malformation in Mango.
6. Citrus canker.
7. Classification of pesticides.
8. Steps in residue analysis.
9. Integrated pest management in flower crops.
10. Integrated pest management in vegetable crops.

**BLUE PRINT FOR QUESTION SETTER**

<b>Unit no. / Title</b>	<b>SAQ</b>	<b>LAQ</b>	<b>Marks allotted to the Module</b>
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



**PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA**  
**III B.Sc., -Horticulture-VI / V Semester End (W.E.F. 2021-22)**  
**DISEASES OF HORTICULTURE PLANTS AND THEIR MANAGEMENT**  
**HORTICULTURE PAPER -VI QUESTION BANK (SEMESTER-V)**

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**UNIT – 1**

5 Marks Questions

1. Little leaf of Brinjal.
2. Anthracnose disease in chilly.
3. Leaf blight in tomato.

10 Marks Questions

1. Diseases and their management in tomato.
2. Diseases and their management in Brinjal.

**UNIT – 2**

5 Marks Questions

1. Die back and black spot disease in Rose
2. Leaf blight disease in Jasmine
3. Blossom blight in Gerbera

10 Marks Questions

1. Discuss briefly on diseases and their management in cut flowers.
2. Discuss briefly on diseases and their management in loose flowers.

**UNIT – 3**

5 Marks Questions

1. Malformation in Mango.
2. Papaya ring spot and leaf curl diseases
3. Citrus canker.

10 Marks Questions

1. Diseases and their management in Mango.
2. Discuss briefly on viral diseases of Papaya.

**UNIT-4**

1.Mark's Questions

- 2.Classification of pesticides.
- 3.Steps in residue analysis.

10 Mark's Questions

1. Pesticide management
2. Chemical nature, formulation, toxicity and action of pesticides.

**UNIT-5**

5 Mark's Questions

1. Integrated pest management in flower crops.
2. Integrated pest management in fruit crops.
3. Integrated pest management in vegetable crops.

10 Mark's Questions

1. Insect pests in Horticultural crops and their management.
2. Integrated pest and diseases management in medicinal and plantation crops.

**UNIT – 1: PROTECTED CULTIVATION (16 Hrs.)**

1. Importance and scope of protected cultivation of vegetable crops.
2. Principles used in protected cultivation, energy management, low cost structures; training methods; engineering aspects.
3. Regulatory structures used in protected structures; types of greenhouse/ polyhouse/ shade nets, hot beds, cold frames,
4. Effect of environmental factors, viz. temperature, light, CO<sub>2</sub> and humidity on growth of different vegetables, manipulation of CO<sub>2</sub>, light and temperature for vegetable production, fertigation.

**UNIT – 2: AGRICULTURE FINANCE AND MANAGEMENT (14 Hrs.)**

1. Credit, Meaning, Importance and credit control. Definition, need for finance in agriculture, characteristics of good agricultural finance (credit)
2. Decision on the use of credit, Principles of farm credit (Equity or Increasing Risk), Added Cost and Added Return, Cost of Credit and no loss no profit goal of farming and opportunity cost Principle.
3. Supporting agencies (Commercial banks, RRB, Lead Bank, NABARD, Cooperative Credit (PACs, Land Development Banks, National Cooperative Federation, Farmers Service Cooperatives).

**UNIT – 3: NURSERY PRODUCTION (08 Hrs.)**

1. Nursery raising in protected structures like poly-tunnels,
2. Types of benches and containers
3. Different media for growing nursery under cover.

**UNIT – 4: CULTIVATION OF HORTICULTURE CROPS IN PROTECTED WAYS (12 Hrs.)**

1. Regulation of flowering and fruiting in vegetable crops, technology for raising tomato, sweet pepper, cucumber and other vegetables in protected structures.
2. Training and staking in protected crops, varieties and hybrids for growing vegetables in protected structures.
3. Insect and disease management in protected structures; soil-less culture, use of protected structures for seed production.

**UNIT – 5: CROP PROTECTION (10 Hrs.)**

1. Recognition and Causes of Crop Disorders; Recognition, Biology and Control of Weeds, gowt agencies Recognition, Biology and Control of Pests; Recognition, Biology and Control of Diseases.
2. Composition, Activity and Persistence of Crop Protection Chemicals and Biological agents.
3. Application of Crop Protection Chemicals; Safe Use, Handling, Transport and Storage of Crop, Protection Chemicals.

**PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA  
III B.Sc-HORTICULTURE-VII (ELECTIVE)/ VI Semester End (W.E.F. 2021-22)**

**HORTICULTURE PRACTICAL SYLLABUS  
PROTECTED CULTIVATION OF HORTICULTURAL CROPS**

**Total hours of laboratory Exercises 30 hrs @ 2 per week**

**Total credits:02**

**SEMESTER-VI PRACTICAL SYLLABUS**

1. Study of various types of structures.
2. Breeding
3. Methods to control temperature, CO<sub>2</sub>, light, media, training and pruning
4. Seed production technology
5. Control of insect-pests and diseases in greenhouse
6. Economics of protected structures.
7. Visit to established green/polyhouse/net house/shade house in the region.

**SUGGESTED READINGS:**

- Chandra S & SomV. 2000. Cultivating Vegetables in Green House. Indian Horticulture 60:17-18.
- Prasad S & Kumar U. 2005.Greenhouse Management for Horticultural Crops. Agrobios.
- Tiwari GN. 2003. Green House Technology for Controlled Environment.Narosa Publ. House.

**PRACTICAL MODEL PAPER:**

1. Major Experiment	-	15 Marks
2. Minor	-	10 Marks
3. Record and Viva	-	10 Marks
		-----
Total	-	35 Marks
CCA	-	15 Marks
		-----
<b>TOTAL MARKS</b>	-	<b>50 Marks</b>
		-----

**PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA  
III Year B.Sc., Degree Examinations at VI Semester End  
Horticulture Paper VII: PROTECTED CULTIVATION OF HORTICULTURAL  
CROPS**

**SECTION – A**

**3X10 = 30M**

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

1. Manipulation of environmental factors in protected cultivation.
2. Types of loans and classification of agriculture credit.
3. Nursery raising in Protected structures in poly tunnels.
4. Insect and disease management in protected cultivation.
5. Recognition and causes of crop disorders.

**SECTION – B**

**6X5 = 30M**

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

1. Importance of cultivation of vegetables in protected structures.
2. Fertigation.
3. Definition and importance of farm credit.
4. Principles of farm credit.
5. Types of benches.
6. Types of containers.
7. Training and staking in vegetable crops.
8. Soil less culture.
9. Transport and storage of crops.
10. Handling of plant protection chemicals.

**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

**PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA  
III B.Sc., -Horticulture-VII / VI Semester End (W.E.F. 2021-22)  
PROTECTED CULTIVATION OF HORTICULTURAL CROPS  
HORTICULTURE PAPER -VII QUESTION BANK (SEMESTER-VI)**

## **UNIT – 1**

### 5 Marks QUESTIONS

1. Importance of protected cultivation of vegetable crops.
2. Environmental factors on protected cultivation.
3. Fertigation

### 10 Marks QUESTIONS

1. Regulatory structures used in protected cultivation.
2. Manipulation of environmental factors in protected cultivation

## **UNIT – 2**

### 5 Marks QUESTIONS

1. Definition and importance of Agriculture finance.
2. Principles of Farm credit.
3. Types of loans.

### 10 Marks Questions

1. Sources of Agriculture Finance.
2. Types of loans and classification of agriculture credit.

## **UNIT – 3**

### 5 Marks Questions

1. Types of Benches.
2. Types of Containers.

### 10 Marks Questions

1. Nursery raising in protected structures in poly tunnels.
2. Different media for growing nursery under cover.

## **UNIT – 4**

### 5 Marks Questions

1. Training and staking in vegetable crops.
2. Soilless culture.
3. Use of Protected structures for seed production.

### 10 Marks questions

1. Regulation of flowering and fruiting in vegetable crops.
2. Insect and disease management in protected structures.

## **UNIT-5**

### 5 Mark's questions

1. Transport and storage of crops.
2. Protection chemicals.

3. Handling of protection chemicals.

10 Mark's Questions

1. Recognition and causes of crop disorders.
2. Activity and persistence of crop protection chemicals and Biological agents.

**PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA**  
**III B.Sc-HORTICULTURE-VIII-A-1 (CLUSTER)/ VI Semester End (W.E.F. 2021-22)**  
**HORTICULTURE EXTENSION AND VALUE ADDED PRODUCTS**

**Total hours of Teaching 60hrs @ 4 hrs per week**

**Total Credits:03**

**UNIT – 1: BASICS OF HORTICULTURE EXTENSION (14 Hrs.)**

1. Extension education: meaning, definition, nature, scope, objectives, principles, approaches and history.
2. Motivation of women community, children, youth and voluntary organizations for horticulture extension work.
3. Transfer of technology programs like lab to land programme (LLP) national demonstration (ND), front line demonstration (FLD) Krishi Vigyan Kendras (KVK).
4. Scope and importance of Participatory Rural Appraisal (PRA) & Rapid Rural Appraisal (RRA).

**UNIT – 2: COMMUNICATION AND PROGRAMME PLANNING (12 Hrs.)**

1. Communication – meaning, definition, models, elements and their characteristics.
2. Types and barriers in communication.
3. Programme planning – meaning, definition, principles, steps in programme development process and monitoring.
4. Evaluation of extension programs.

**UNIT – 3: MODERN COMMUNICATION GADGET (10 Hrs.)**

1. Modern communication sources – internet, video and teleconferencing.
2. Interactive Multimedia Compact Disk (IMCD) village kiosks,
3. Kissan Call Centre (KCC), mobile phone.

**UNIT – 4: PROCESSING AND VALUE ADDITION (12 Hrs.)**

1. Processing using sugar: principle – processing of jam, jelly, marmalade, squash, RTS, nectar, fruit bar, preserves and candies.
2. Processing using salt: Principle – brining preservation of horticultural produces preparation of pickles and sauces.
3. Processing of dehydrated products, fruit pulps, vegetable and spice products, Canning: principles, methods – preparation of canned products - spoilage of canned foods and its prevention.

**UNIT – 5: PRINCIPLES OF PRESERVATION (12 Hrs.)**

1. Preservation by low temperature: definition, principle, method, suitability, refrigeration,
2. Freezing - preparation of frozen foods, preservation by controlled atmosphere, modified atmosphere: definition, principle, method, suitability.
3. Processing by irradiation: definition, principle, method, suitability – application of irradiation in food industry.

**PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA  
III B.Sc- HORTICULTURE-VIII-A-1(CLUSTER) / VI Semester End (W.E.F. 2021-22)**

**CLUSTER ELECTIVE PRACTICAL SYLLABUS**

**HORTICULTURE EXTENSION AND VALUE ADDED PRODUCTS**

**Total hours of laboratory Exercises 30 hrs @ 2 per week**

**Total credits:02**



## **SEMESTER-VI PRACTICAL SYLLABUS**

1. Different types of communication systems for extension.
2. Identification and documentation- propagation in medicinal crops. Visit to commercial medicinal plants field, Visit to GMP. Packaging of medicinal and aromatic plants using different packing materials. Waxing, methods of storage. Drying technology of medicinal plants.
3. Identification of major spices and plantation crops varieties – Rapid multiplication technique and nursery management.
4. Equipment used in food processing unit, preparation of beverages – Squash, RTS, Nectar, Cordial, Crush, Syrup, Wine and juice concentrate, preservation With sugar – Jam, Jelly, Marmalade, Candy, Preserve, Glazed candies and Crystallized fruits preservation with salt & vinegar – Pickle, Chutney, Sauce – dehydration of horticultural produces, by products from waste – freezing of fruit and vegetables, canning of fruit and vegetables – value added product from spices, preparation of herbal drinks quality control of value added products - quality analysis of horticultural produces –visit to food processing industries, spice and coffee board.

### **SUGGESTED READINGS:**

- Jitendra Singh. 2008. Spices and Plantation Crops. Aavishkar Publishers, Distributors, Jaipur.
- Tiwari, R.S and Ankur Agarwal 2004. Production technology of spices. International book distributing Co., Lucknow.
- Farooqi, M. M. Khan and M. Vasundhara. 2004. Production technology of medicinal and aromatic crops. Publ. Natural Remedies Pvt. Ltd., Bangalore

### **PRACTICAL MODEL PAPER:**

1. Major Experiment	-	15 Marks
2. Minor	-	10 Marks
3. Record and Viva	-	10 Marks
		-----
Total	-	35 Marks
CCA	-	15 Marks
		-----
<b>TOTAL MARKS</b>	-	<b>50 Marks</b>
		-----

**PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA**  
**III Year B.Sc., Degree Examinations at VI Semester End**  
**Horticulture Paper VIII-A-1- HORTICULTURE EXTENSION AND VALUE ADDED**  
**PRODUCTS**  
**(Model Question Paper w.e.f. 2021-22)**

**Time: 21/2 Hrs.**

**Max. Marks: 60**

**SECTION – A**

**3X10 = 30M**

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

1. Scope and importance of participatory rural appraisal and rapid appraisal.
2. Processing and application of irradiation in food industry.
3. Types and barriers in communication.
4. Preservation of fruits and vegetables by using salt.
5. Definition, scope, objectives, nature and history of Extension education.

**SECTION –B**

**6X5 = 30M**

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

1. Scope and importance of extension education.
2. Programme planning.
3. Kissan call centers.
4. Principles and methods of canning.
5. Modified atmosphere
6. Frozen foods
7. Processing of dehydrated fruit.
8. Interactive multimedia compact disc.
9. Definition and elements of communication
10. Volunteer organizations for horticulture extension work

**BLUE PRINT FOR QUESTION SETTER**

<b>Unit no. / Title</b>	<b>SAQ</b>	<b>LAQ</b>	<b>Marks allotted to the Module</b>
Unit – 1 : Basics of Horticulture Extension	2	1	20
Unit – 2 : Communication and programme planning	2	1	20
Unit – 3 : Modern communication gadget	2	1	20
Unit – 4 : Processing and value addition	2	1	20
Unit – 5 : Principles of preservation	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  
III B.Sc., -Horticulture-VIII-A-1 / VI Semester End (W.E.F. 2021-22)  
HORTICULTURE EXTENSION AND VALUE ADDED PRODUCTS  
HORTICULTURE CLUSTER ELECTIVE QUESTION BANK (SEMESTER-VI)**

**UNIT – 1**

### 5 Marks QUESTIONS

1. Scope and importance of extension education.
2. Krishi vignan kendra.
3. Volunteer organizations for horticulture extension work.

### 10 Marks QUESTIONS

1. Scope and importance of participatory rural appraisal and rapid appraisal.
2. Definition, scope, objectives, nature and history of Extension education.

### **UNIT – 2**

#### 5 Marks QUESTIONS

1. Definition and elements of communication.
2. Programme planning.

#### 10 Marks Questions

1. Types and barriers in communication.
2. Evaluation of extension programs.

### **UNIT – 3**

#### 5 Marks Questions

1. Interactive multimedia compact disc.
2. Village kiosks.
3. Kissan call centers.

#### 10 Marks Questions

1. Modern communication sources.

### **UNIT – 4**

#### 5 Marks Questions

1. Principles and methods of canning.
2. RTS
3. Processing of dehydrated fruit.

#### 10 Mark's questions

1. Preservation of fruits and vegetables by using sugar.
2. Preservation of fruits and vegetables by using salt.

### **UNIT -5**

#### 5 Mark's questions

1. Modified atmosphere
2. Frozen foods

#### 10 Mark's questions

1. Preservation by low temperature.
2. Processing and application of irradiation in food industry.

**PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA  
III B.Sc-HORTICULTURE-VIII-A-2 (CLUSTER)/ VI Semester End (W.E.F. 2021-22)**

**MEDICINAL AND PLANTATION CROPS**

**Total hours of Teaching 60hrs @ 4 hrs per week**

**Total Credits:03**

**UNIT-I: PRODUCTION TECHNOLOGY OF FOLLOWING CROPS (15Hrs)**

**COCONUT:** Uses, Varieties- Tall x dwarf hybrids (TxD), Dwarf x tall hybrids (DxT), Tall x tall hybrids (T x T). Soil, Climate, Propagation – Seed propagation, Selection of seed nuts, selection of seedling for planting. Preparation of pits and planting, Irrigation, Manuring and fertilization, methods of application of fertilizers, weeding. Harvesting, Yield, Storage.

**OIL PALM:** Introduction, uses, varieties, seed propagation, Climate – Sunshine and Temperature Requirement Types of soils for oil palm growing regions, Spacing, Planting, Irrigation, Manuring, Weeding and Mulching Harvesting and yield

**COCOA:** Introduction, products/Byproducts chocolate, varieties, Climate, Soil, Seed and Vegetative propagation, Cuttings, preparation of land, provision of Shade, Spacing, Planting- Cocoa under Natural Shade, Intercropping Irrigation, Manuring, weeding, types of branching, training and pruning, Harvesting.

**UNIT-II: (15Hrs)**

**CASHEW NUT:** Introduction, uses, Climate, Soils, varieties/ hybrids, Propagation – Vegetative propagation, Epi-cotyl grafting and Cuttings. Planting, Branching Pattern, Irrigation, weeding, Manuring, Training and pruning, Rejuvenation, flowering, Harvesting, Yield.

**COFFEE:** Introduction, soil, Climate, types- differences Arabica/robusta, branching, varieties, propagation, Raising nurseries. Preparation of main field and planting, Provision of shade, Advantages of shade, Disadvantages of shade, Irrigation, Manuring, Training and pruning – Trenching, Mulching, Weeding, Liming, Flowering- season of flowering, Fruit set and harvesting and Yield.

**UNIT-III: MEDICINAL PLANTS (15Hrs)**

**ALOE:** Importance and uses, description of plant, species and varieties, soil, climate, land preparation, propagation crop duration, spacing & planting, manuring, irrigation, inter-cultivation, harvesting, yield and chemical composition.

**RAUVOLFIA, MORINDA:** Importance and uses, botany, varieties, soil, climate propagation spacing, planting, manuring, irrigation, weeding, harvesting, root yield.

**ASWAGANDHA:** Importance and uses, description of plant, varieties, soil, climate, propagation manures, fertilizers and inter cultivation Harvesting, crop duration, method of harvesting drying, grading and yield, chemical constituents.

**UNIT-IV: AROMATIC CROPS: (15Hrs)**

**CITRONELLA & LEMONGRASS:** Importance and uses, botany, varieties, soil, climate, land preparation, propagation, spacing, planting, manures and fertilizers, irrigation, interculture, harvesting & yield of herb and oil.

**MINT:** Importance and uses, distribution, description of species of mint, varieties, chemical composition and uses, seasons, soil, climate, land preparation, propagation, spacing, planting, manures and fertilizers, irrigation, interculture, harvesting & yield.

**PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA  
III B.Sc- HORTICULTURE-VIII-A-2(CLUSTER) / VI Semester End (W.E.F. 2021-22)  
CLUSTER ELECTIVE PRACTICAL SYLLABUS**

**MEDICINAL AND PLANTATION CROPS**

**Total hours of laboratory Exercises 30 hrs @ 2 per week**

**Total credits:02**

## **SEMESTER-VI PRACTICAL SYLLABUS**

1. Description and identification of coconut, & oil palm varieties/ Hybrids
2. Layout and planting of coconut, oil palm.
3. Description and identification of cacao varieties/ Hybrids.
4. Selection of mother palm, seed nuts and planting of seed nuts in the nursery of coconut.
5. Visit of commercial plantations in the district
6. Collection of locally available medicinal plants, plant description
7. Propagation techniques for two important medicinal plants
8. Important cultural aspects and harvesting techniques for important medicinal plants.
9. Visit to nearest medicinal garden
10. Preparation of herbarium of locally available medicinal plants
11. protected cultivation of high value protected crops

## **SUGGESTED READINGS**

- Kumar, N.B., Md Abdul khaddar, M., Rangaswamy, P and Iruippan, I. 1997. Introduction to Spices, Plantation Crops and Aromatic Crops. Oxford & IBH, New Delhi.
- Shanmugavelu, K. G. Kumar, N and Nad Peter, K.V. 2005.
- Production Technology of Spices and Plantation Crops. Agrosis, Jodhpur.
- Jain, S. K. 1983. Medicinal plants. National Book Trust, New Delhi. Dastur J F 1982. Medicinal plants of India and Pakistan. Taraporevala sons and Co. Pvt. Ltd., Bombay.
- Atal, E. K and Kapur, B. M. 1982. Cultivation and Utilization of medicinal and aromatic plants. CSIR, 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
		-----
<b>TOTAL MARKS</b>	-	<b>50 Marks</b>
		-----

**PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA**  
**III Year B.Sc., Degree Examinations at VI Semester End**  
**Horticulture Paper VIII-A-2- MEDICINAL AND PLANTATION CROPS**  
**(Model Question Paper w.e.f. 2021-22)**

**Time: 21/2 Hrs.**

**Max. Marks: 60**

**SECTION – A****3X10 = 30M**

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

1. Production technology of Oil palm
2. Production technology of Cocoa
3. What is the production technology of Cashew nut?
4. Production technology of Aloe
5. What is the production technology of Citronella?

**SECTION – B****6X5 = 30M**

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

1. Write few verities of oil palm
2. What are the Byproducts of Cocoa?
3. Differences between Arabica and Robusta
4. Advantages and Disadvantages of shade
5. Importance and uses of Morinda
6. Root yield of Rauvolfia
7. Importance and uses of Lemon grass
8. Species of Mint
9. What are the branching, training and pruning in Cocoa?
10. Flowering and fruit set in Coffee

**BLUE PRINT FOR QUESTION SETTER**

Unit no. / Title	SAQ	LAQ	Marks allotted to the Module
Unit – 1 : Basics of Horticulture Extension	2	1	20
Unit – 2 : Communication and programme planning	2	1	20
Unit – 3 : Modern communication gadget	2	1	20
Unit – 4 : Processing and value addition	2	1	20
Unit – 5 : Principles of preservation	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**  
**III B.Sc., -Horticulture-VIII-A-2 / VI Semester End (W.E.F. 2021-22)**  
**MEDICINAL AND PLANTATION CROPS**  
**HORTICULTURE CLUSTER ELECTIVE QUESTION BANK (SEMESTER-VI)**

**UNIT- I**

10 marks questions

1. Production technology of Coconut
2. Production technology of Oil palm
3. Production technology of Cocoa

5 marks questions

1. Explain few varieties of coconut
2. Write few varieties of oil palm
3. What are the Byproducts of Cocoa?
4. What are the branching, training and pruning in Cocoa?

### **UNIT – II**

10 marks questions

1. What is the production technology of Cashew nut?
2. Production technology of Coffee

5 marks questions

1. Epicotyl Grafting
2. Differences between Arabica and Robusta
3. Advantages and Disadvantages of shade
4. Pest and diseases management in Coffee

### **UNIT- III**

10 marks questions

1. Production technology of Aloe
2. Production technology of Rauwolfia
3. Production technology of Ashwagandha

5 marks questions

1. What are the importance and uses of Aloe Vera?
2. Importance and uses of Morinda
3. Explain Drying and grading of Ashwagandha?
4. Root yield of Rauwolfia

### **UNIT – IV**

10 marks questions

1. What is the production technology of Citronella?
2. What is the production technology of Mint?

5 marks questions

1. Importance and uses of Lemon grass
2. Importance and uses of Mint
3. Species of Mint

**PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA  
CERTIFICATE COURSE FOR HORTICULTURE  
PRINCIPLES OF ORGANIC FARMING**

**2021-22**

**B.Sc, HBC FOR I,II,III Years**

**Course code: OFT 01**

**Total Hours:30**

**Credits: -2**

**UNIT I: ORGANIC FARMING – SCOPE**

**(10 Hrs)**

1. Introduction, concept and development of organic farming
2. Relevance in present context, Organic production Requirements
3. Methods of Organic Farming.

**UNIT II: PLANT NUTRITION**

**(10 Hrs)**

1. Nutrition- types of nutrients
2. Role and Deficiency symptoms of Macro elements
3. Role and Deficiency symptoms of Micro elements

**UNIT III: NUTRIENT MANAGEMENT**

**(10Hrs)**

1. Inorganic Nutrient Management Impact
2. Biological Intensive Nutrient management
3. Types of Organic Fertilizers: Green Manures, Vermicomposts and bio fertilizers
4. Recycling of Organic Residues

**PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA  
PROJECTS FOR HORTICULTURE**

**2021-22**

**B.Sc, HBC FOR I,II,III Years**

**Course code: OFT 01**



- 1. Apiculture – Honey collection**
- 2. Garlands preparation**
  - a. Floral ornaments & Flower arrangements**
  - b. Bouquets, Garlands**
- 3. Dry flower technology**

**Enrolment in NPTEL Courses 2021-2022 For Horticulture  
Faculty & Students**

<b>Course Name</b>	<b>SME Name</b>	<b>Institute</b>	<b>Course</b>	<b>Timeline</b>
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			<b>Duration</b>	
Irrigation and Drainage	Prof. Damodhara Rao Mailapalli	IIT Kharagpur	12 Weeks	Jul-Oct 2022
Organic Farming for Sustainable Agricultural Production	Prof. Dilip Kumar Swain	IIT Kharagpur	08 Weeks	Jul-Sept 2022

**P R GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA**

The Board of Studies in B.Sc Horticulture for the Academic year 2021-2022 held in Nov 2021 in Dept. of Botany & 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 2021-22.
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 2021-22.

**Dr. G. JYOTHIRMAYI**  
Lecturer in Botany  
GDC(A), Rajamahendravaram  
Mobile: 7989171117  
E-mail: drgjbotanymr@gmail.com

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 2021-22.
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.

**Dr. Ch.JOHN SAMUEL**  
Lecturer in-Charge  
Dept. of Botany & Horticulture  
PRGC(A), Kakinada

**Dr. J.SUNITHA,**  
Principal  
GDC Kovvur  
Mobile: 9441050910  
E-mail: drjsuneetha@gcrjy.ac.in

**Dr. K.V.V.G.K.VARA PRASAD**

Lecturer in Botany  
GDC(A), Tuni  
Mobile: 9908876727  
E-mail: prasadkommula03@gmail.com

**Smt P. SWATHI**

Assistant Director,  
Biological Control Laboratory  
Dept. of Agriculture, Kakinada  
Mobile: 9848350962  
E-Mail: swathi3002@yahoo.com

**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

**FACULTY MEMBERS:**

**1. Smt. SARA PALAPARTHY**

Lecturer in Botany  
PRGC(A), Kakinada

**2. P.NICEE**

Guest Faculty in Horticulture