

DEPARTMENT OF HORTICULTURE
SYLLABUS FOR B.VOC HORTICULTURE

2022-23

Under NSQF Scheme



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 Horticulture

**P R GOVERNMENT COLLEGE(AUTONOMOUS),KAKINADA,E.G.DT.
Department of Botany and B.Voc(Horticulture)**

The Board of Studies meeting for Horticulture subject during the academic year 2022-23 is conducted at the Dept. of Botany & B.Voc (Horticulture) on 05th Dec,2022 with Capt.Dr.M.Krishna Rao,Lecturer –in-Charge in the chair along with the following members.

Name,Designation and Address

Signature

1. CHAIR PERSON:

Capt.Dr.M.Krishna Rao
Lecturer in-Charge
Dept. of Horticulture
PRGC(A), Kakinada



2. ADIKAVI NANNAYA UNIVERSITY NOMINEE:

Dr. J.SUNEETHA,
Principal
GDC Kovvur
Mobile: 9441050910
E-mail: drjsuneetha@grjy.ac.in



3. MEMBERS NOMINATED BY EXECUTIVE COUNCIL OF THE COLLEGE:

a. SUBJECT EXPERT 1:

Dr.A.Srinivasa Rao
Lecture in Botany
Arts College,Rajahmundry,
Mobile;9985076306
E-Mail;drannabattulasrao@gmail.com



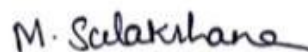
b. SUBJECT EXPERT 2:

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



c. SUBJECT EXPERT 3:

Dr.M.Sulakshana
Lecturer in Botany
ASD Women's Degree College Kakinada
Mobile:7997633870



d. INDUSTRIAL EXPERT :

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

Swathi

Name, Designation and Address

Signature

e. 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

Suneetha

4. MEMBERS FROM THE COLLEGE:

a. FACULTY MEMBER:

1. **B.Ashok Rama Raju**
Guest Faculty in Horticulture
2. **P.Rajesh**
Guest Faculty in Horticulture

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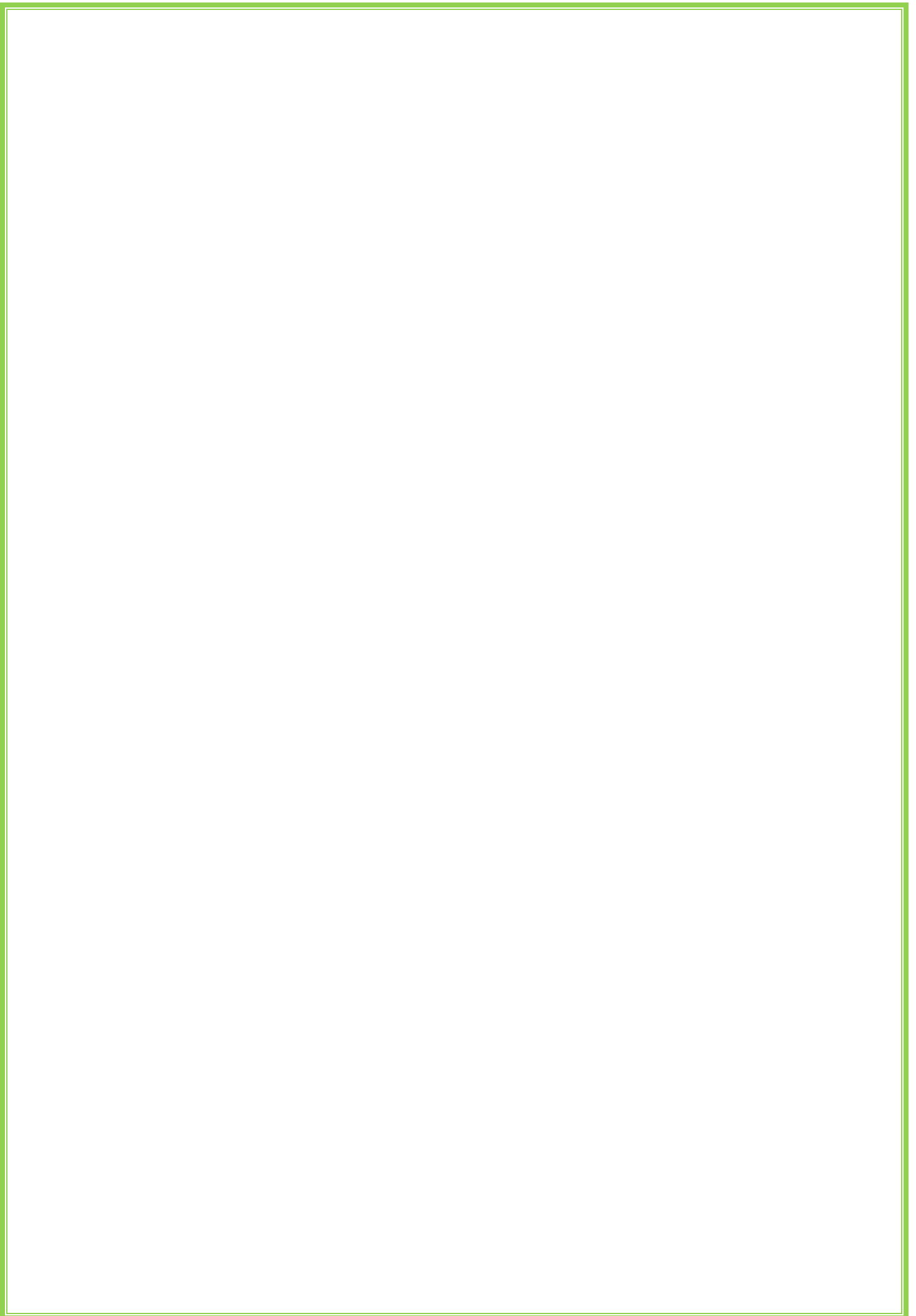
P. Rajesh

b. STUDENT MEMBERS:

1. **L.S.S.N VINEETHA** II HBC
2. **P.RAJESWARI** II B.VOC

L.S.S.N.Vineetha.

S. Rajeswari



About B.Voc (HORTICULTURE)

The University Grants Commission (UGC) had launched a scheme on 27 February, 2014 for skills development based higher education as part of college/university education, leading to Bachelor of Vocation (B.Voc.) degree with multiple entry and exit points. Considering the implementation modalities, the guidelines of the scheme have been revised in the year 2015. The B.Voc. Programme is focused on universities and colleges providing undergraduate studies which would also incorporate specific job roles and their NOSs along with broad based general education. This would enable the graduates completing B.Voc to make a meaningful participation in accelerating India's economy by gaining appropriate employment, becoming entrepreneurs and creating appropriate knowledge.

Objectives

1. To provide judicious mix of skills relating to a profession and appropriate content of general education.
2. To ensure that the students have adequate knowledge and skills, so that they are work ready at each exit point of the programme.
3. To provide flexibility to students by means of pre-defined entry and multiple exit points.
4. To integrate NSQF within the undergraduate level of higher education in order to enhance employability of the graduates and meet industry requirements. Such graduates apart from meeting the needs of local and national industry are also expected to be equipped to become part of the global workforce.
5. To provide vertical mobility to students coming out of (a) 10+2 with vocational subjects ;and (b) Community Colleges.

Course Objectives:

To make student

1. Understand the basic concepts of horticulture
2. Understand different types of horticulture products
3. Develop skills in the usage and application of land measuring instruments
4. Understand the technologies of various horticulture products
5. Acquire knowledge on various types of packaging materials.
6. Understand various forms of herbal products.
7. Acquire knowledge on different types of instrumentation techniques in soil analysis.
8. Understands the importance of preservation techniques.
9. Acquire knowledge on the basic concepts of computers
10. Develop skills in MS word, MS Excel and MS Power Point applications.
11. Develop communication and soft skills.
12. Undergo field training and acquires skills in various instrumentation techniques.
13. Visit organic product industries and understand the functioning of plant.

Course Outcomes:

At the end of the course, the student will be able to

1. Acquire competence and skills in various techniques in fruit and vegetable production technologies.
2. Ready to get a suitable position or job role such as field officer, horticulturist in commercial Industries.
3. Choose for an academic progression under vertical mobility for higher studies.
Eligible for various competitive examinations in various posts recruited by State and Central Government.

P.R.GOVERNMENT COLLEGE (AUTONOMOUS) KAKINADA
CURRICULAR FRAMEWORK FOR B.VOC COURSES UNDER NSQF FOR THE YEAR 2020-21
B.Voc HORTICULTURE(Biology stream)

SUBJECT/SEMESTER		I		II		III		IV		V		VI		
		H/W	C	H/W	C	H/W	C	H/W	C	H/W	C			
English		4	3	4	3	4	3						Third Phase of Apprenticeship for the V/VI First and Second Phase (2 Spells) of	
Second Language(Telugu/Hindi/Sanskrit)		4	3	4	3	4	3							
Life Skill Courses		2	2	2	2	2+2	2+2							
Skill Development Courses		2	2	2+2	2+2	2	2							
Core Subjects														
Major Subject -1	C1 to C5 Botany (Theory & Practicals)	6/ 4+2	4+1	6/ 4+2	4+1	6/ 4+2	4+1	4+2 4+2	4+1 4+1					
Major Subject -2	C1 to C5 Chemistry (Theory & Practicals)	4+2	4+1	4+2	4+1	4+2	4+1	4+2 4+2	4+1 4+1					
Vocational	C1 to C14 including SECHORTICULTURE(Theo ry & Practicals)	4+2	4+1	4+2	4+1	4+2	4+1	4+2 4+2	4+1 4+1	4+2	4+1	4+2	4+1	
	C2, C4, C6 (Theory and Lab/Institutional/Industrial Training)HORTICULTURE	2+2	2+1	2+2	2+1	2+2	2+1			4+2	4+1	4+2	4+1	4+2
Total Hrs/Week(Academic Credits)		34	28	36	30	36	30	36	30	36	30	12	4	4
Extension Activities														
NCC/NSS/Sports/Extra Curricular									2					
Yoga							1		1					
Extra Credits														
Hrs/W(Total Credits)		34	28	36	30	36	31	36	33	36	30	12	4	4

Marks and Credits distribution(Biology Stream)**

S.No	Course Type	No. of Courses	Course wise Teaching Hrs/Week	Credits for each Course	Total Credits	Each Course Evaluation			Practical Biology	Total(Theory +Practical)	Total Marks(Biology Stream* *)
						Theory					
						Continuous Assessment	End Semester	Total			
1	English	3	4	3	9	40	60	100		100	300
2	Second Language	3	4	3	9	40	60	100		100	300
3	Life Skill Courses	4	2	2	8	0	50	50		50	200
4	Skill Development Courses	4	2	2	8	0	50	50		50	200
5	Core/SE –I Botany	5	4+2	4+1	25	40	60	100	50	150	750
6	Core/SE–II Chemistry	5	4+2	4+1	25	40	60	100	50	150	750
7	Vocational Courses(C1to C14)Horticulture	1	4+2	4+1	55	40	60	100	50	150	1650
	VocationalCoursesC2, C4,C6Horticulture	3	2+2	2+1	9		50	50	50	100	300
8	Summer Vacation Internship	2		4	8					100	200
9	Industrial Internship for One full Semester	1		12	12					200	200
10	Extension Activities(Non Academic Credits)										
	NCC/NSS/ Sports/Extra Curricular			2	2						
	Yoga	2		1	2						
	Extra Credits										
	Hrs/W (Total Credits)& Marks	4 3			17 2						485 0

PITHAPURRAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA

B. VOC COURSES UNDER NSQF SCHEME

STUDENT ELIGIBILITY AND FACULTY ELIGIBILITY

S.NO	NAME OF THE COURSE	STUDENTS ELIGIBILITY (10+2 Or EQUIVALENT WITH SPECIFIC GROUP IF ANY)	FACULTY ELIGIBILITY WITH SPECIALIZATION
1	B. VOC (COMMERCIAL AQUACULTURE)	Intermediate/10+2 or equivalent With Bi.P.C/Biology	M.Sc Aquaculture/Marine Biology/Zoology with fishery Biology spe
2	B. VOC (HORTICULTURE)	Intermediate/10+2 or equivalent With Bi.P.C/Biology	M.Sc Horticulture/Biology/Botany with Horticulture Specialization
3	B. VOC (PHARMACEUTICAL CHEMISTRY)	Intermediate or 10+2 with MPC/BiPC group	M. Pharm/M.Sc (Pharmaceutical Chemistry)/M.Sc (Chemistry)
4	B. VOC (FOOD TECHNOLOGY)	Intermediate or 10+2 with MPC/BiPC group	M.Sc (Food Technology)/M.Sc (Food Processing)/M.Sc (Food And Nutrition)/M. Sc (Foods, Drugs & Water)
5	B. VOC (JOURNALISM AND MASS COMMUNICATION)	Intermediate or 10+2 or equivalent	M.A (Journalism)
6	B. VOC (HOTEL MANAGEMENT)	Intermediate/10+2 or equivalent	MBA (Hotel Management)/M.Com Hotel Management/M.Com Or MBA with Diploma in Hotel Management

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

B.Voc HORTICULTURE COURSE STRUCTURE AND SYLLABUS

S. No	VOCATIONAL SUBJECTS		MARKS	CREDITS	MAIN SUBJECTS	MARKS	CREDITS
	I Year	Semester-I					
1	Core I	Fundamentals of horticulture	100	4	Botany I	100	4
		Skill components	50	1	Practical I	50	1
	Core II	Soil science and crop physiology	50	2	Chemistry I	100	4
		Skill components	50	1	Practical I	50	1
	Life Skill	Computer Application	50	2	General English	100	3
	Skill Development	Plant Nursery	50	2	II nd Language	100	3
		Semester-II					
	Core III	Plant propagation and nursery management	100	4	Botany II	100	4
		Skill components	50	1	Practical II	50	1
	Core IV	Seed production technology & green house management	50	2	Chemistry II	100	4
		Skill components	50	2	Practical II	50	1
	Life Skill	Information and communication technology	50	2	General English	100	3
		Food adulteration	50	2	II nd Language	100	3
	Skill Development	Fruit and vegetable preservation	50	2			
	First phase of Apprenticeship between summer vacation						4
2	II Year	Semester-III					
	Core V	Fruit crops production technology	100	4	Botany III	100	4
		Skill components	50	1	Practical III	50	1
	Core VI	Vegetable crop production technology	50	2	Chemistry III	100	4
		Skill components	50	2	Practical III	50	1
	Life skill	Environmental education	50	2	General English	100	3
Personality development and leadership		50	2	II nd Language	100	3	

	Skill Development	Environment audit	50	2				
		Semester-IV						
	Core VII	Commercial floriculture	100	4	Botany V	100	4	
		Skill components	50	1	Practical V	50	1	
	Core VIII	Medicinal and plantation crops	50	4	Chemistry IV	100	4	
		Skill components	50	1	Practical IV	50	1	
		Botany IV	100	4	Chemistry V	100	4	
		Practical IV	50	1	Practical V	50	1	
	Second phase of apprenticeship between Summer vacation							4
5	IIIYear	Semester-V						
	Core IX	Farm management and marketing	100	4	Soil Microbiology	50		
		Skill components	50	1	Practical	50		
	Core X	General principles of fruits and Vegetables preservation	100	4	Agriculture microbiology	50		
		Skill components	50	1	Practical	50		
	Core X	Project	150	5	Chemistry	50		
				Practical	50			
6 46	IIIYear	Semester-VI						
	Core XI	Recent advances in Horticulture	100	4	Plant Physiology	50		
		Skill components	50	1	Practical	50		
	Core XII	Post Harvest Technology of Horticulture crops	100	4	Agricultural Microbiology	50		
		Skill components	50	1	Practical	50		
	Core XIII	Organic Farming	100	4	Chemistry	50		
		Skill components	50	1	Practical	50		
	Third phase of apprenticeship for the entire VI semester							1 2

Total Credits 172
Total Marks 4850

HORTICULTURE

SEMESTER-I

PRGOVERNMENTCOLLEGE(A),KAKINADA
B.VOC (Horticulture)
SEMESTER-ICORE-I
FUNDAMENTALSOFHORTICULTURE

Course Objectives:

- ❖ Enhance **horticulture** production, augment farmers, income and strengthen nutritional security
- ❖ Improve productivity by way of quality germplasm
- ❖ Planting material and water use efficiency through Micro Irrigation

UNIT-I

Scope and importance of horticulture, Division of horticulture, classification of Horticultural plants, Brief note on some families of Horticultural importance. Agroecological regions of India, major Horticultural crops grown in different Agroecological regions of India. Agroclimatic zones of AP

UNIT-II

Tools, machinery and implements used in horticultural operations.

UNIT-III

Weed and water management in horticultural crops.

Weed – Definition, classification and characteristics of weeds. Principles and methods of weed management; preventive, cultural, mechanical, chemical, biological and alternate methods – IWM for horticultural crops – management of problematic, parasitic and aquatic weeds.

Irrigation methods – surface, sub-surface, and advance methods - drip, sprinkler and green house and landscape irrigations.

UNIT-IV

Special cultural practices for horticultural crops – Training, Pruning, Staking, Pinching, Disbudding, Mulching, Trellising, Caging, Earthing up, Trenching and Raking.

Protection against Pests and Diseases

PRACTICALS:

1. Study of tools and implements– their uses and identification
2. Study of different methods of Training and Pruning
3. Layout of different irrigation systems
4. Mapping of horticultural zones of India and Andhra Pradesh
5. Explain about micro irrigation methods
6. Classification and identification of weeds
7. Practices of mechanical methods of weed control
8. Practices of manual methods of weed control
9. Identification of herbicides–and practicing herbicide application techniques.
10. Visit nearest micro irrigated field.

SUGGESTED READINGS

1. Edmond, J.B., Senn, T. L., Andrews, F. S and Halfacre, R. G. 1963. Fundamentals of Horticulture. Tata MacGrawHill Publishing Co. New Delhi.
2. Kumar, N. 1990. Introduction to Horticulture. Rajyalakshmi Publications Nagarcoil, Tamilnadu.
3. ICAR. HandBooks of Horticulture

BLUEPRINT FOR QUESTION SETTER

UNIT NO.	ESSAY QUESTIONS 10 MARKS	SHORT ANSWER QUESTIONS 5 MARKS	VERY SHORT ANSWER QUESTIONS 2 MARKS	MARKS ALLOTTED TO THE UNIT
UNIT- 1	02	01	02	29
UNIT-2	01	01	02	19
UNIT-3	01	02	02	24
UNIT-4	01	02	02	24
Total no. of Questions	05	06	08	
Total Marks	Including	Choice		96

P R GOVERNMENT COLLEGE(A), KAKINADA
B.Voc HORTICULTURE EMESTER – I CORE – I
FUNDAMENTALS OF HORTICULTURE
IMPORTANTQUESTION BANK

UNIT-I

ESSAYS

1. What is the scope and importance of Horticulture?
2. Agro ecological regions in India, what are the major crops grown in different agro ecological regions of India?

SHORTS

1. Divisions of Horticulture
2. Brief note on some families of horticulture
3. Classification of Horticultural plants.

UNIT- II

ESSAY

- 1.Explain10 different types of tools, machinery and implements used in Horticultural crops

SHORT

1. Explain following tools
 - a. spade
 - b. Lawn mover
 - c. Grafting knife

UNIT-III

ESSAYS

1. What is a weed? Water management in Horticultural crops?
2. What are the classification and characteristics of weed?
3. Explain the principles and methods of a weed?
4. IWM
5. Explain irrigation methods?

SHORTS

1. What is surface and sub surface irrigation?
2. Classification of weed?
3. What is a greenhouse? Uses?
4. What is Land scape irrigation?

UNIT-IV

ESSAY

- 1.Explain special cultural practices of Horticultural crops? Explain few of them.

SHORTS

1. Training & Pruning
2. Mulching ? Uses?
3. What is caging? Differences between caging & Raking?

B.VOC, HORTICULTURE LANDSCAPE MANAGEMENT
SEMESTER-I, CORE – I
FUNDAMENTALS OF
HORTICULTURE MODEL QUESTION
PAPER

Time: 2hrs

Marks: 50

PART-I

Answer any **THREE** of the following. Draw a neat labeled diagram whenever necessary

3 x 10 = 30

1. What is the scope and importance of Horticulture?
2. Agro ecological regions in India, what are the major crops grown in different agroecological regions of India?
3. Explain 10 different types of tools, machinery and implements used in Horticultural crops
4. What is a weed? Water management in Horticultural crops?
5. What are the classification and characteristics of weed?

PART-II

Answer any **FOUR** of the following. Draw a neat labeled diagram when ever necessary

4 x 5 = 20

1. Divisions of Horticulture
2. Brief note on some families of horticulture
3. Explain following tools
 - a) spade
 - b) Lawn mover
 - c) Grafting knife
4. What is surface and subsurface irrigation?
5. What is a greenhouse? Uses?
6. Training & Pruning
7. Mulching? Uses?
8. What is caging ? Differences between caging & Raking?

P.R GOVERNMENT COLLEGE(A),KAKINADA

B.VOC (Horticulture)

SEMESTER-I

CORE-II

SOIL SCIENCE & CROP PHYSIOLOGY OF HORTICULTURAL CROPS

Course Objectives:

- ❖ To provide a better appreciation of the distribution and variability of soils and their properties across the landscape
- ❖ A preliminary ability to investigate soil characteristics
- ❖ Basic concepts underlying crop physiology will be demonstrated through laboratory exercises

UNIT-I

Soil – definition – components – pedology –Edaphology. Physical properties of soil – Colour, Texture, structure, Bulk density, Particle density, Pore space; soil water, soil air, soil temperature and their significance in crop production.

UNIT-II

Soil chemical properties – Soil reaction, EC and CEC. Soil Organic Matter and its importance on soil properties—Major, secondary and micro nutrients
–Soils of Andhra pradesh. Soil fertility and Productivity. Major soils of India

UNIT-III PLANTWATERRELATIONS

Importance of crop physiology in horticulture, role of water, water potential and components
–Definitions –field capacity of soil and permanent wilting point, absorption and translocation of water and solutes ,transpiration–significance–anti transpirants. Influence of climate on Horticultural crops, Environmental control of plant growth, applications of PGRs in Horticulture

UNIT-IVNUTRIO PHYSIOLOGY

Mineral nutrition – mobility and mechanism of uptake – physiological role of nutrients ,physiological disorders – nutritional disorders – difference between physiological and nutritional disorders–diagnosis, identification of disorders –foliar. Management techniques
–foliar feeding ,root feeding, trunk feeding and fertigation.

PRACTICALS

1. Study of different soils
2. Skill learning in soil sampling
3. Determination of soil texture by feel method
4. Estimation of stomatal index and stomatal frequency.
5. Application of auxins to stem cuttings and observation on rooting studies.

SUGGESTED READINGS

1. T.Biswas, M.S.Mukherjee 2001. A textbook of Soil Science
2. www.icar.org.in
3. www.epa.gov
4. <http://www.plantphys.org>
5. <http://www.botany.org>

BLUEPRINT FOR QUESTION SETTER

UNIT NO.	ESSAY QUESTIONS 10 MARKS	SHORT ANSWER QUESTIONS 5 MARKS	MARKS ALLOTTED TO THE UNIT
UNIT- 1	01	02	20
UNIT-2	01	02	20
UNIT-3	01	02	20
UNIT-4	02	01	25
Total No. of Questions	05	07	
Total marks Including choice			85

**P R GOVERNMENT COLLEGE(A),
KAKINADASEMESTER – I CORE – II
SOIL SCIENCE & CROP PHYSIOLOGY OF HORTICULTURAL
CROPS IMPORTANT QUESTION BANK**

UNIT– I

Essays

1. Explain brief account about physical properties of soil?
2. Describe soil structure, soil texture and pore space?

Shorts

1. Write about soil structure?
2. What is the definition of soil? Write about its components.
3. Write about bulk density, partial density and pore space?

UNIT– II

Essays

1. Write about soils of A.P?
2. Write about different soil and its chemical properties?

Shorts

1. Write about cation exchange capacity?
2. What is organic matter? Importance
3. Micronutrients of soil
4. Essential nutrients for crop plants

UNIT– III

Essays

1. What is Transpiration? Its significance.
2. What is water potential and its components?

Shorts

1. Explain field capacity of Soil?
2. What are the Anti-Transparents?
3. Permanent wilting point.

UNIT– IV

Essays

1. What are the physiological disorders of nutrients?
2. What are the nutritional disorders of nutrients?

Shorts

1. Trunk feeding technique
2. Root feeding technique
3. Foliar feeding techniques
4. Fertigation

**P R GOVERNMENT COLLEGE (A), KAKINADAB.VOC,
HORTICULTURELANDSCAPE
MANAGEMENTSEMESTER-I CORE – II
SOIL SCIENCE & CROP PHYSIOLOGY OF HORTICULTURAL CROPS
MODEL QUESTION PAPER**

Time:3hrs

Marks:50

PART-I

Answer any **THREE** of the following questions. Draw a neat labelled diagram whenever necessary. **3x10=30M**

1. Explain brief account about physical properties of soil?
2. Write about different soil and its chemical properties?
3. What is water potential and its components?
4. What are the nutritional disorders of nutrients ?
5. Write about bulk density ,partial density and pore space?

PART-II

Answer any **FOUR** questions

4 x 5 = 20 M

1. Write about soil structure?
2. What is the definition of soil? Write about its components.
3. Write about cation exchange capacity?
4. What is organic matter? Importance
5. Explain field capacity of Soil?
6. What are the Anti-Transparents?
7. Fertigation

PR GOVERNMENT COLLEGE(A),KAKINADA
I B.Voc., HORTICULTURE SEMESTER-I,
MODEL QUESTION PAPER

Time:3hrs.

TITLE:-----

Marks:60

PART-I

Answer any **THREE** of the following questions. Draw a neat labelled diagram whenever necessary

3x10= 30

1. Long answer question from UNIT-1
2. Long answer question from UNIT -2
3. Long answer question from UNIT -3
4. Long answer question from UNIT-4
5. Long answer question from ANY UNIT

PART-II

Answer any **FOUR** questions

4x5 = 20

1. SAQ from UNIT-1
2. SAQ from UNIT-2
3. SAQ from UNIT-3
4. SAQ from UNIT-4
5. SAQ from ANY one of the UNIT
6. SAQ from ANY one of the UNIT
7. SAQ from ANY one of the UNIT

PR GOVERNMENT COLLEGE(A),KAKINADA
B.Voc., HORTICULTURE
SEMESTER-I,
PRACTICAL MODEL QUESTION PAPER

Time:2hrs.

TITLE:-----

Marks:50

A. Major experiment	1x10m	=10marks
B. Minor experiment	3x6m	=18marks
C. Spotters	6x2m	=12marks
D. Record & Viva	5+5m	=10marks

Total -50marks

SEMESTER-II

PR GOVERNMENT COLLEGE(A), KAKINADA
B. Voc (Horticulture)
SEMESTER-II
CORE-III
PLANT PROPAGATION AND NURSERY MANAGEMENT

Course Objectives:

- ❖ To provide basic knowledge about tools, equipments and growing structures used in nursery for plant production
- ❖ To impart knowledge on establishment of commercial plant tissue culture unit
- ❖ Develop skills necessary to manage a wholesale nursery

UNIT-I

Propagation, Need and Potentialities for plant multiplication, sexual and asexual methods of propagation, advantages and disadvantages, Propagation by division – suckers, rhizomes, corms, tubers, cloves and bulbs.

UNIT- II

Methods of grafting–Approach grafting; Veneer grafting; Wedge grafting; Saddle grafting; Tongue grafting; Whip grafting; Bridge grafting; Epi-cotyl grafting; Softwood grafting. Methods of budding – ‘T’ budding, Inverted ‘T’ budding, Shield budding; Chip budding; Flute budding; Ring budding; ‘I’ budding. Selection of mother plant –Establishment of progeny orchard/ mother plant block;-pre-curing of scion
Propagation by cutting – Hard wood, Semi -hard wood, Herbaceous – physiological and bio-chemical basis of rooting; Use of growth regulators in rooting of cuttings. Propagation by layering – types of layering; establishment of layers in the field; Use of growth regulators in layering

UNIT- III

Micro propagation – Choice of explant (totipotency); media-MS-media, Growth regulators in culture, sterilization of the explant, sub-culturing of the callus, Hardening of plants

UNIT- IV

Definition of a nursery, different types of nursery beds-flat beds, raised beds and sunken beds, their merits and demerits. Different nursery techniques and their management, Propagation structures: Mist chamber, humidifier, greenhouses, glasshouses, cold frames, hotbeds and poly houses.

PRACTICALS

1. Study of various propagation media for nursery beds, pots and mist chamber.
2. Preparation of nursery beds(raised and flat beds) and sowing of seeds.
3. Raising of root stocks of different fruit plants like Mango,Citrus ,Cashew etc.
4. Preparation of plant material for planting
5. Hardening of plants in the nursery – different methods like reducing Irrigation, Shade, exposure for short periods to sun etc.
6. Study and practicing of different propagation methods by cutting.
7. Study and practicing of different propagation methods by layering.
8. Study and practicing of different propagation methods by grafting
9. Study and practicing of different propagation methods by budding
10. Study and practicing of different propagation methods by divisions
11. Application of nutrients and plant protection chemicals in the nursery

SUGGESTED READINGS

1. Garmer, R. J and Choudhri, S. A. 1972. Propagation of Tropical Fruit Trees. Oxford &IBH Publishing Co., New Delhi.
2. Mukherjee, S. K and Majumder, P. K. 1973. Propagation of Fruit Crops. ICAR, NewDelhi.
3. Hartman, H. T and Kester, D. E. 1976. Plant Propagation – Principles and Practices Prentice Hall of India Pvt. Ltd. Bombay.
4. Sadhu,M.K.1996.PlantPropagation.NewAge International Publishers, NewDelhi.

BLUEPRINT FORQUESTIONSETTER

UNITNO.	ESSAYQUESTIONS10MARKS	SHORTANSWERQUESTIONS5MARKS	VERYSHORTANSWERQUESTIONS2MARKS	MARKS ALLOTTEDTO THE UNIT
UNIT-1	02	01	02	29
UNIT-2	01	01	02	19
UNIT-3	01	02	02	24
UNIT-4	01	02	02	24
Total No.of Questions	05	06	08	
Total Marks Including Choice				96

P R GOVERNMENT COLLEGE(A), KAKINADA
SEMESTER– II CORE – III
PLANT PROPAGATION AND NURSERY MANAGEMENT
IMPORTANT QUESTION BANK

UNIT– I

Essays

1. Define propagation. Explain propagation by division Suckers, rhizomes, corms, tubers ,cloves and bulbs with neat diagrams
2. Define propagation? Explain sexual and asexual methods of propagation, advantages and disadvantages

SHORTS

1. Need and potentialities for plant multiplication
2. Advantages of asexual methods of propagation
3. Propagation by rhizomes, tubers, with neat diagrams

UNIT– II

ESSAYS

1. Different methods of Grafting with neat diagrams
2. Different methods of Budding with neat diagrams
3. Different methods of cuttings with neat diagrams
4. Different methods of Layering with neat diagrams

SHORTS

1. Selection of Mother plant
2. Use of growth regulator in rooting of cuttings
3. Physiological and bio-chemical basics of rooting
4. Establishment of progeny orchard

UNIT– III

ESSAYS

1. Define Micro-propagation and explain its procedure
2. Explain MS-media, Growth regulators in culture

SHORTS

1. Sterilization of explants
2. Sub-culturing of the callus
3. Hardening of plants

UNIT– IV

ESSAYS

1. Definition of a nursery, different types of nursery beds-flat beds, raised beds, sunken beds, their merits and demerits

2. Different nursery techniques and their management
3. Describe about different propagation structures with neat diagrams

SHORTS

1. Mist chamber
2. Poly house
3. Raised beds with merits and demerits

VERYSHORTS

1. Suckers
2. Bulbs
3. Corms
4. Bridge grafting
5. T-budding
6. Trench layering
7. Totipotency
8. Humidifiers
9. Cold frame

PR GOVERNMENT COLLEGE(A),KAKINADA
B.VOC, HORTICULTURE,
SEMESTER –II CORE –III
MODEL QUESTION PAPER

Time:3hrs

Marks:60

PART–I

Answer any **THREE** of the following. Draw a neat labeled diagram whenever necessary

3 x 10 = 30

1. Define propagation. Explain propagation by division Suckers, rhizomes, corms, tubers, cloves and bulbs with neat diagrams
2. Different methods of Grafting with neat diagrams
3. Define Micro-propagation and explain its procedure
4. Definition of a nursery, different types of nursery beds-flat beds, raised beds, sunken beds, their merits and demerits
5. Explain MS-media, Growth regulators in culture

PART–II

Answer any **FOUR** of the following. Draw a neat labelled diagram whenever necessary

4 x 5 = 20

1. Need and potentialities for plant multiplication
2. Use of growth regulators in rooting of cuttings
3. Sub-culturing of the callus
4. Raised beds with merits and demerits
5. Advantages of asexual methods of propagation
6. Selection of Mother plant
7. Hardening of plants
8. Sterilization of explants

PART–III

Answer all **FIVE** questions

5 x 2 = 10

1. Suckers
2. T-budding
3. Humidifiers
4. Cold frame
5. Totipotency

PR GOVERNMENT COLLEGE(A), KAKINADA

B. Voc (Horticulture)

SEMESTER-II

CORE-IV

SEED PRODUCTION TECHNOLOGY & GREEN HOUSE MANAGEMENT

Course Objectives:

- ❖ Rapid multiplication :To increase agricultural production.
- ❖ Assured high quality of seeds: Good vigour and viability
- ❖ To prepare students for college and careers by exposing them to problem solving strategies.

UNIT-I

Seed - definition - importance - quality characteristics - generation system – seed multiplication ratio –Seed production - importance - difference between seed and crop, production difference between variety and hybrid seed production-Basic principles of seed

UNIT-II

production in tropical vegetables -tomato, Brinjal and chilies - bhendi and vegetable cowpea, lablab and cluster bean – some of Cucurbitaceae crops. onion, amaranthus and moringa. Seed production temperate vegetables in cabbage, cauliflower - carrot and beetroot - potato. Seed production in papaya and coconut.

UNIT-III

Introduction to greenhouses – history – definition – greenhouse effect – advantages of greenhouses 114. Brief description of types of greenhouses – greenhouses based on shape, utility, construction, covering materials and cost, shadenet.

UNIT- IV

Irrigation system used in greenhouses – rules of watering – hand watering, perimeter watering, overhead sprinklers, boom watering and drip irrigation. Threshing – types of threshers – parts – threshers for different crops – terminology.

PRACTICALS

1. Identification and study on seed structure in horticultural crops
2. Practicing emasculation and dusting techniques (tomato/brinjal/okra)
3. Practicing different seed extraction methods
4. Study of different types of greenhouses based on shape
5. Visit a nearest Greenhouse

SUGGESTED READINGS

1. Thompson, H. C and Kelly, W. C. 1959. Vegetable Crops. Tata Mc Graw Hill Publishing Co.Ltd., Bombay.
2. Bose, T.K et al. 2003. Vegetables Crops. Naya Udyog Publishers, Kolkata.
3. Aldrich, R. A and Bartok, J.W. 1990. Greenhouse Engineering. Ball Pub., USA.
4. Radha Manohar, K and Igathinathane, C. 2000. Greenhouse Technology and Management. BS Publications, Hyderabad.

BLUEPRINT FOR QUESTION SETTER

UNIT NO.	ESSAY QUESTIONS 10 MARKS	SHORT ANSWER QUESTIONS 5 MARKS	MARKS ALLOTTED TO THE UNIT
UNIT- 1	01	02	20
UNIT-2	01	02	20
UNIT-3	01	02	20
UNIT-4	02	01	25
Total No. of Questions	05	07	
Total marks Including choice			85

P R GOVERNMENT COLLEGE (A), KAKINADA
SEMESTER – II CORE-IV
SEED PRODUCTION TECHNOLOGY & GREENHOUSE MANAGEMENT
IMPORTANT QUESTION BANK

UNIT– I

Essays

1. Seed definition, importance, quality characteristics of seed?
2. Differences between variety and hybrid seed production?

Shorts

1. Seed Generation system
2. SMR
3. Principles of seed

UNIT– II

Essays

1. Production technology of Brinjal and seed extraction method of onion
2. Some of Cucurbitaceae crops
3. Seed production echnology of Cauliflower
4. Seed production technology of Coconut

Shorts

1. Seed extraction method of Amaranthus
2. Production technology of Cowpea
3. Production technology of Carrot

UNIT– III

Essays

1. Definition of greenhouse? Brief description and types of greenhouses-green houses based on shape, advantages of green houses
2. Brief description and types of greenhouses-greenhouses based on construction, covering materials

Shorts

1. Green house-history
2. Green house effect
3. Shade net

UNIT– IV

Essays

1. Different types of irrigation system used in greenhouses
2. Definition of Threshing-types of threshers

Shorts

1. Rules of Watering
2. Drip irrigation
3. Types of threshers

Very Shorts

1. Greenhouse
2. Rein forced plastic
3. Saw tooth type GH
4. Relative humidity
5. Ventilation
6. CO₂
7. Off season drying
8. Orientation
9. Overhead sprinklers
10. Threshers

P R GOVERNMENT COLLEGE(A),KAKINADA
B.Voc HORTICULTURE, SEMESTER – II
CORE – IV
MODEL QUESTION PAPER

Time:3hrs

Marks:50

PART-I

Answer any **THREE** of the following questions. Draw a neat labelled diagram whenever necessary. **3X10=30M**

1. A Seed definition, importance, quality characteristics of seed?
2. Production technology of Brinjal and seed extraction method of onion
3. Definition of greenhouse? Brief description and types of greenhouses-green houses based on shape, advantages of green houses
4. Different types of irrigation system used in greenhouses
5. Seed production technology of Cauliflower

PART-II

Answer any **FOUR** questions

4 X5 = 20 M

1. Seed Generation system
2. Principles of seed
3. Seed extraction method of Amaranthus
4. Production technology of Cowpea
5. Greenhouse effect
6. Shade net
7. Saw tooth type GH

MODELQUESTIONPAPER

Time:2hrs.

TITLE:-----

Marks:50

PART-I

Answer any **THREE** of the following questions. Draw a neat labelled diagram whenever necessary

3x10= 30

6. Long answer question from UNIT-1
7. Long answer question from UNIT -2
8. Long answer question from UNIT -3
9. Long answer question from UNIT-4
10. Long answer question from ANY UNIT

PART-II

Answer any **FOUR** questions

4x5 = 20

8. SAQ from UNIT-1
9. SAQ from UNIT-2
10. SAQ from UNIT-3
11. SAQ from UNIT-4
12. SAQ from ANY one of the UNIT
13. SAQ from ANY one of the UNIT
14. SAQ from ANY one of the UNIT

PRACTICALMODELQUESTIONPAPER

Time:2hrs.

TITLE:-----

Marks:50

A. Major experiment	1x10m	=10marks
B. Minor experiment	3x6m	=18marks
C. Spotters	6x2m	=12marks
D. Record & Viva	5+5m	=10marks

	Total	-50marks

SEMESTER-III

PR GOVERNMENT COLLEGE(A), KAKINADA
B.Voc(Horticulture)
SEMESTER-III CORE-V
FRUIT CROP PRODUCTION TECHNOLOGY

Course Objectives:

- ❖ This course is designed to provide science and technology-based information on fruit crop production for a wide range of students, both graduate and undergraduate.
- ❖ The course objectives will be met by relating physiological processes of fruit plants to the cultural practices necessary for successful fruit production
- ❖ This course is designed to generate a capacity for decision making and problem solving in production based upon knowledge and resources.

UNIT-I

Definition – area and production of fruit crops in Andhra Pradesh – Orchard management – Definition-Selection and layout of orchard –Physical features in orchard, Planting systems.

UNIT-II

Study of cultural practices of the following fruit crops, with reference to soil, climate, varieties, methods of propagation, nutrient, irrigation and weed management practices –training and pruning – role of growth regulators – maturity standards for harvesting – postharvest technology of fruit crops – yield – grading – packing – storage and value added products.

UNIT-III

Production technology of following tropical fruits – Mango, Banana, Papaya, Sapota, Guava, Pineapple.

UNIT-IV

Production technology of following sub-tropical and temperate fruits –Apple, Grapevine, -Organic fruit production.

PRACTICALS

1. Selection and layout of orchards and physical features in orchard
2. Different planting systems in fruit crops
3. Description and identification of varieties of Mango and Banana based on flower and Fruit morphology.
4. Description and identification of varieties of Citrus.
5. Description and identification of varieties of Papaya, Sapota, Guava and pineapple.
6. Description and identification of varieties of Pomegranate, Ber.
7. Training and Pruning of Mango, Guava and Citrus.
8. Pre-treatment of Banana suckers and de suckering in Banana
9. Manure & Fertilizer application including Bio-fertilizers in different fruit crops (Methods of application, calculation of the required Manure & Fertilizers based on the nutrient content).
10. Visit to commercial orchards.

SUGGESTED READINGS

1. Bose, T.K and Mitra, S.K. 1990. Fruits Tropical and Subtropical. Naya Prakash, Calcutta.
2. Ranjit Singh, 1992. Fruits. N.B.T., New Delhi.
3. Chattopadhyay, T. K 1997. Text book on Pomology (Fundamentals of fruit growing). Kalyani Publishers, Hyderabad.
4. Chandra, K. L. (ICAR) 2002, 2001. Handbook of Horticulture. ICAR, New Delhi.

BLUEPRINT FOR QUESTION SETTER

UNIT NO.	ESSAY QUESTIONS 10 MARKS	SHORT ANSWER QUESTIONS 5 MARKS	VERY SHORT ANSWER QUESTIONS 2 MARKS	MARKS ALLOTTED TO THE UNIT
UNIT- 1	02	01	02	29
UNIT-2	01	01	02	19
UNIT-3	01	02	02	24
UNIT-4	01	02	02	24
Total No. of Questions	05	06	08	
Total marks Including choice				96

P R GOVERNMENT COLLEGE (A), KAKINADA
SEMESTER – III CORE – V
FRUIT CROP PRODUCTION TECHNOLOGY
IMPORTANT QUESTION BANK

UNIT– I

Essays

1. Definition of Pomology? Definition of orchard management and selection and layout of orchard.
2. Physical features in Orchard, planting system

Shorts

1. Area and production of fruit crops in AndhraPradesh
2. Selection and layout of Orchard
3. Planting systems

UNIT– II

Essays

1. Post-harvest technology of fruit crops
2. Training and pruning–role of growth regulators in fruit crops

Shorts

1. Maturity standards for Harvesting
2. Methods of propagation
3. Value added products

UNIT– III

Essays

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

Shorts

1. Varieties in Banana
2. Irrigation methods in citrus
3. Nutrient management in sapota

UNIT– IV

Essays

1. Production technology of Pineapple
2. Organic fruit production

Shorts

1. Packing of Apple
2. Commercial propagation of pineapple
3. Value added products of Almond

Very Shorts

1. Orchard
2. Hexagonal planting system
3. Weed management
4. Pruning
5. Grading
6. Tropical fruits
7. Storage
8. Tropical fruits
9. RTS
10. Pear

B.Voc, HORTICULTURE, SEMESTER –III
CORE –V
FRUIT CROP PRODUCTION TECHNOLOGY
MODEL QUESTION PAPER

Time:3hrs

Marks:60

PART-I

Answer any **THREE** of the following. Draw a neat labeled diagram whenever necessary

3 x 10 = 30

1. Definition of Pomology? Definition of orchard management and selection and layout o for chard.
2. Post-harvest technology of fruit crops
3. Production technology of Mango
4. Production technology of Pineapple

PART-II

Answer any **FOUR** of the following. Draw a neat labeled diagram whenever necessary

4 x 5 = 20

1. Area and production of fruit crops in AndhraPradesh
2. Maturity standards for Harvesting
3. Varieties in Banana
4. Packing of Apple
5. Selection and layout of Orchard
6. Methods of propagation
7. Irrigation methods in citrus
8. Commercial propagation of pineapple

PART-III

Answer all **FIVE** questions

5 x 2 = 10

1. Orchard
2. Weed management
3. Grading
4. Storage
5. RTS

B. Voc (Horticulture)
SEMESTER-III CORE-VI
VEGETABLE CROP PRODUCTION TECHNOLOGY

Course Objectives:

- ❖ Describe about origin, area, production, improved varieties, soil and climate requirement for different season vegetable and spice crops.
- ❖ Execute various cultivation practices such as time of sowing, or transplanting techniques.
- ❖ Analyze harvesting time and techniques of various vegetable and spices crops, storage conditions and requirements as per the cultivated crops.

UNIT-I

Scope and importance of vegetable cultivation – area and production in Andhra Pradesh – systems of vegetable cultivation – kitchen garden – truck garden and market garden – gardening for Processing.

UNIT-II

Climate – soil requirement – varieties / hybrids – seed rate – nursery practices – portray nursery – transplanting – manuring – irrigation – fertigation. Weeding – chemical – mechanical weed control – use of growth regulators- special horticultural practices (training, staking, pruning) – physiological disorders, nutrient deficiency and their corrective measures – Maturity indices- harvesting – grading, sorting – packing and storage and yield. Production technology of the following crops: Tomato, Brinjal, Chillies, Bhendi, Onion, Beans

UNIT-III

Production technology of the following crops: cucumber – Ridge gourds – ivy gourd - pumpkin - Cabbage – Cauliflower.

UNIT-IV

Production technology of the following root crops Radish – Carrot, Yam, Potato, Leafy vegetables : Amaranthus – Palak

PRACTICALS

1. Layout of kitchen garden
2. Classification of vegetable crops
3. Identification and description of Solanaceous vegetable varieties
4. Identification and description of varieties of cucurbits
5. Visit to vegetable farmers' fields, Visit to vegetable markets for study of marketing problems

SUGGESTED READINGS

1. Thompson, H. C and Kelly, W. C. 1959. Vegetable Crops. Tata Mc Graw Hill Publishing Co. Ltd., Bombay.
2. Premnath Velyudhan, S and Singh, D. P. 1987. Vegetables for the Tropical Region ICAR, New Delhi.
3. Shanmugavelu, K. G. 1989. Production Technology of Vegetable Crops. Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi.
4. Chaudhary, B. 1992. Vegetables. National Book Trust, New Delhi.

BLUEPRINT FOR QUESTION SETTER

UNIT NO.	ESSAY QUESTIONS 10 MARKS	SHORT ANSWER QUESTIONS 5 MARKS	MARKS ALLOTTED TO THE UNIT
UNIT-1	01	02	20
UNIT-2	01	02	20
UNIT-3	01	02	20
UNIT-4	02	01	25
Total No. of Questions	05	07	
Total marks Including choice			85

P R GOVERNMENT COLLEGE (A), KAKINADA
SEMESTER – III, CORE – VI
VEGETABLE CROP PRODUCTION TECHNOLOGY
IMPORTANT QUESTION BANK

UNIT– I

Essays

1. Systems of vegetable cultivation
2. Scope and importance of vegetable cultivation

Shorts

1. Kitchen garden
2. Area and production in AP
3. Gardening for processing

UNIT– II

Essays

1. Production technology of Tomato
2. Production technology of Onion
3. Production technology of Bhendi

Shorts

1. Physiological disorders in chilly
2. Nutrient deficiency in Tomato
3. Horticultural practices(Training,Staking,pruning)

UNIT– III

Essays

1. Production technology of pumpkin
2. Production technology of Cabbage
3. Production technology of Cauliflower

Shorts

1. Use of growth regulators in vegetable production
2. Diseases in Cabbage
3. Sex expressions in Cucurbits

UNIT– IV

Essays

1. Production technology of Carrot
2. Production technology of Potato
3. Production technology of Amaranthus

Shorts

1. Manuring of moringa
2. Propagation of Colacasia
3. Grading of leafy vegetables

VeryShorts

1. Olericulture
2. Hybridseeds
3. Staking
4. Moringa
5. Radish
6. Horticultural practices in cucumber
7. Uses of palak
8. Portray nursery
9. Maturity indices in potato
10. Storage of root crops

B.Voc, HORTICULTURE, SEMESTER –III
CORE–VI
VEGETABLE CROP PRODUCTION TECHNOLOGY
MODEL QUESTION PAPER

Time:3hrs

Marks:60

PART–I

Answer any **THREE** of the following questions. Draw a neat labelled diagram whenever necessary. **3X10=30M**

4. 1.Production technology of Tomato
5. Production technology of Onion
6. Production technology of Potato
7. Production technology of Amaranthus
8. Scope and importance of vegetable cultivation

PART–II

Answer any **FOUR** questions

4 X 5 = 20 M

8. Manuring of moringa
9. Propagation of Alcasia
10. Grading of leafy vegetables
11. Use of growth regulators in vegetable production
12. Diseases in Cabbage
13. Sex expressions in Cucurbits
14. Physiological disorders in chilly

**I B.Voc., HORTICULTURE SEMESTER-III,
MODELQUESTION PAPER**

Time:2hrs.

TITLE:-----

Marks:50

PART-I

Answer any **THREE** of the following questions. Draw a neat labelled diagram whenever necessary

3x10= 30

11. Long answer question from UNIT-1
12. Long answer question from UNIT -2
13. Long answer question from UNIT -3
14. Long answer question from UNIT-4
15. Long answer question from ANY UNIT

PART-II

Answer any **FOUR** questions

4x5 = 20

15. SAQ from UNIT-1
16. SAQ from UNIT-2
17. SAQ from UNIT-3
18. SAQ from UNIT-4
19. SAQ from ANY one of the UNIT
20. SAQ from ANY one of the UNIT
21. SAQ from ANY one of the UNIT

SEMESTER-IV

PR GOVERNMENT COLLEGE(A), KAKINADA
B.VOC(Horticulture)
SEMESTER-IV CORE VII
COMMERCIAL FLORICULTURE

Course Objectives:

- ❖ Historical facts of gardening in India
- ❖ The importance of gardening in various eras
- ❖ Various styles of gardens present in our country

UNIT-I

Scope and importance of commercial floriculture in India. Present status, Future prospects and strategies needed for improvement. Area, production and exports.

UNIT-II

Classification, species and varieties, climate and soil requirements, propagation, land preparation, planting Manures and fertilizers, cultural operations,(pinching and disbudding) use of growth regulators, harvesting, and yield.

Production technology: Rose, Jasmine, Tuberose, Chrysanthemum, Marigold, Crossandra.

UNIT-III

Introduction to protected structures for cut flower production –Study of cut flower, production technology of Carnation, Gerbera, Anthurium, Gladiolus

UNIT-IV

Post-harvest management of cut flowers – Floral decorations, bouquets and dry flowers – Grading, packing and marketing of flowers.

PRACTICALS

1. Propagation methods in chrysanthemum
2. Preparation of nursery bed for flower seeds sowing.
3. Identification of important flower crops and their varieties
4. Training and Pruning of Roses in open and poly houses
5. Propagation of rose by cutting and budding
6. Layering methods for Jasmine propagation
7. Practices in post-harvest management of cut flowers (pre cooling, grading, pulsing, storage, packing and marketing of cut flowers)
8. Field visit to commercial flower growing area

SUGGESTED READINGS

1. Randhawa, G. S and Mukhopadhyaya, A. 2004. Floriculture in India. Allied Publishers Pvt.Ltd., New Delhi.
2. Bose, T.K and Yadav, L.P. 1989. Commercial Flowers. Nayaprakash, Calcutta.
3. Pal, B.P. 1991. The Rose in India. Publications and Information Division ICAR, New Delhi.
4. Aora, J. S. 2006. Introductory Ornamental Horticulture. Kalyani Publishers, Ludhiana – 141 008.

BLUEPRINT FOR QUESTION SETTER

UNIT NO.	ESSAY QUESTIONS 10 MARKS	SHORT ANSWER QUESTIONS 5 MARKS	VERY SHORT ANSWER QUESTIONS 2 MARKS	MARKS ALLOTTED TO THE UNIT
UNIT- 1	02	01	02	29
UNIT-2	01	01	02	19
UNIT-3	01	02	02	24
UNIT-4	01	02	02	24
Total No. of Questions	05	06	08	
Total marks Including choice				96

**B.Voc., HORTICULTURE SEMESTER-IV,
PRACTICAL MODEL QUESTION PAPER**

Time:2hrs.

TITLE:-----

Marks:50

A. Major experiment	1x10m	=10marks
B. Minor experiment	3x6m	=18marks
C. Spotters	6x2m	=12marks
D. Record & Viva	5+5m	=10marks

Total -50marks

**B.Voc., HORTICULTURE SEMESTER – IV,
CORE – VII MODEL QUESTION PAPER**

Time:3hrs.

TITLE:-----

Marks:70

PART-I

Answer any **THREE** of the following questions. Draw a neat labelled diagram whenever necessary

3x10= 30

16. Long answer question from UNIT-1
17. Long answer question from UNIT -2
18. Long answer question from UNIT -3
19. Long answer question from UNIT-4
20. Long answer question from ANY UNIT

PART-II

Answer any **FOUR** questions

4x5 = 20

22. SAQ from UNIT-1
23. SAQ from UNIT-2
24. SAQ from UNIT-3
25. SAQ from UNIT-4
26. SAQ from ANY one of the UNIT
27. SAQ from ANY one of the UNIT
28. SAQ from ANY one of the UNIT

PART-III

Answer any TEN Questions

10 x 2=20

1. VSAQ from UNIT-1
2. VSAQ from UNIT-2
3. VSAQ from UNIT-3
4. VSAQ from UNIT-4
5. VSAQ from UNIT-1
6. VSAQ from UNIT-2
7. VSAQ from UNIT-3
8. VSAQ from UNIT-4
9. VSAQ from UNIT-1
10. VSAQ from UNIT-2
11. VSAQ from UNIT-3
12. VSAQ from UNIT-4

SEMESTER – IV
CORE – VII
COMMERCIAL FLORICULTURE
IMPORTANT QUESTION BANK

UNIT– I

Essays

1. Scope and importance of commercial floriculture in India
2. Area, production and exports of flowers in India.

Shorts

1. Strategies needed for improvement
2. Importance of commercial floriculture

UNIT– II

Essays

1. Production technology of Rose
2. Classification of Roses
3. Production technology of chrysanthemum
4. Production technology of Crossandra

Shorts

1. Pinching and disbudding
2. Use of growth regulators
3. Extraction of Jasmine oil

UNIT– III

Essays

1. Production technology of Gerbera
2. Production technology of Carnation
3. Production technology of Gladiolus

Shorts

1. Climate and soil requirement of Anthurium
2. Propagation of Gladiolus
3. Flower forms of Gerbera

UNIT– IV

Essays

1. Post-harvest management of cut flowers
2. Types of floral arrangement

Shorts

1. Bouquets
2. Dry flowers
3. Packing of flowers

Very shorts

1. Floriculture
2. Exports
3. Cut flowers
4. Marigold harvesting process
5. Gladiolus varieties
6. Marketing of Jasmine
7. Importance of flowers
8. Anthurium varieties
9. Gerbera uses
10. Packing of Roses

B.Voc, HORTICULTURE
SEMESTER -IVCORE –VII
COMMERCIAL FLORICULTURE
MODEL QUESTION PAPER

Time:3hrs

Marks:60

PART-I

Answer any **THREE** of the following .Draw a neat labeled diagram whenever necessary

3 x 10 = 30

1. Scope and importance of commercial floriculture in India
2. Production technology of Rose
3. Production technology of Gerbera
4. Post-harvest management of cut flowers

PART-II

Answer any **FOUR** of the following.Draw a neat labeled diagram whenever necessary

4 x 5 = 20

1. Strategies needed for improvement
2. Pinching and disbudding
3. Climate and soil requirement of Anthurium
4. Bouquets
5. Importance of commercial floriculture
6. Uses of growth regulators
7. Propagation of gladiolus
8. Dry flowers

PART-III

Answer all **FIVE** questions

5 x 2 = 10

1. Floriculture
2. Cut flowers
3. Gladiolus varieties
4. Importance of flowers
5. Packing of roses

B. Voc (Horticulture)
SEMESTER-IV CORE VIII

MEDICINAL AND PLANTATION CROPS

Course Objectives:

- ❖ To impart comprehensive knowledge about the production technology of medicinal
- ❖ To develop effective micro propagation system for cost effective quality plant material emphasizing the proper tie up with growers / industries for mass production of tissue-cultured medicinal plants.
- ❖ To create optimum awareness and interest amongst the common people about Medicinal Plants

UNIT-I-PLANTATION CROPS

Production technology of following crops:

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/By products 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

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

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.

Rauwolfia, 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

Citronella&Lemongrass:Importanceanduses,botany,varieties,soil,climate,landpreparation, 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.

PRACTICALS

1. Visit of commercial plantations in the district
2. Collection of locally available medicinal plants, plant description
3. Propagation techniques for two important medicinal plants
4. Visit to nearest medicinal garden
5. Preparation of herbarium of locally available medicinal plants

SUGGESTED READINGS

1. Kumar, N.B., Md Abdul khaddar, M., Ranga swamy, P and Iruiappan, I.1997. Introduction to Spices, Plantation Crops and Aromatic Crops. Oxford & IBH, New Delhi.
2. Shanmugavelu, K. G. Kumar, N and Nad Peter, K.V. 2005. Production Technology of Spices and Plantation Crops. Agrosis, Jodhpur.
3. Jain, S. K. 1983. Medicinal plants. National Book Trust, New Delhi. Dastur J F 1982.Medicinalplantsof India and Pakistan. Taraporevala sons andCo.Pvt. Ltd.,Bombay.
4. Atal, E. K and Kapur, B. M. 1982. Cultivation and Utilization of medicinal and aromatic plants.CSIR, New Delhi.

BLUEPRINT FORQUESTIONSETTER

UNITNO.	ESSAYQUESTIONS10MARKS	SHORTANSWERQUESTIONS5MARKS	MARKS ALLOTTED TO THEUNIT
UNIT- 1	01	02	20
UNIT-2	01	02	20
UNIT-3	01	02	20
UNIT-4	02	01	25
Total No. of Questions	05	07	
Total marks Including choice			85

P R GOVERNMENT COLLEGE (A), KAKINADA
SEMESTER- IV CORE – VIII
MEDICINAL AND PLANTATION CROP
IMPORTANTQUESTION BANK

UNIT-I

ESSAYS

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

SHORTS

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

ESSAYS

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

SHORTS

1. Epicotyl Grafting
2. Differences between Arabica and Robusta
3. Advantages and Disadvantages of shade
4. Flowering and fruits etin Coffee

UNIT- III

ESSAYS

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

SHORTS

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

UNIT– IV

ESSAYS

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

SHORTS

1. Importance and uses of Lemongrass
2. Importance and uses of Mint
3. Species of Mint

VERYSHORTS

1. Uses of Coconut
2. Propagation of Oil palm
3. Shading types in cocoa
4. Rejuvenation
5. Branching pattern
6. Trenching
7. Chemical properties of Aloe
8. Propagation of Morinda
9. Botany of lemongrass
10. Chemical composition of Mint

**B. Voc, HORTICULTURE,
SEMESTER – IV, CORE – VIII
MEDICINAL AND PLANTATION CROPS
MODEL QUESTION PAPER**

Time: 3hrs

Marks: 60

PART-I

Answer any **THREE** of the following questions. Draw a neat labelled diagram when ever necessary. **3X10=30M**

1. Production technology of Coconut
2. Production technology of Oil palm
3. Production technology of Cocoa
4. What is the production technology of Citronella?
5. What is the production technology of Mint?

PART-II

Answer any **FOUR** questions

4 X 5 = 20 M

1. Explain few varieties of coconut
2. Write few varieties of oil palm
3. What are the By products of Cocoa?
4. Epicotyl Grafting
5. Differences between Arabica and Robusta
6. Advantages and Disadvantages of shade
7. Flowering and fruits etin Coffee

I B.Voc., HORTICULTURE
SEMESTER-IV, MODEL QUESTION PAPER

Time: 2hrs.

TITLE:-----

Marks: 50

PART-I

Answer any **THREE** of the following questions. Draw a neat labelled diagram when ever necessary

3x10= 30

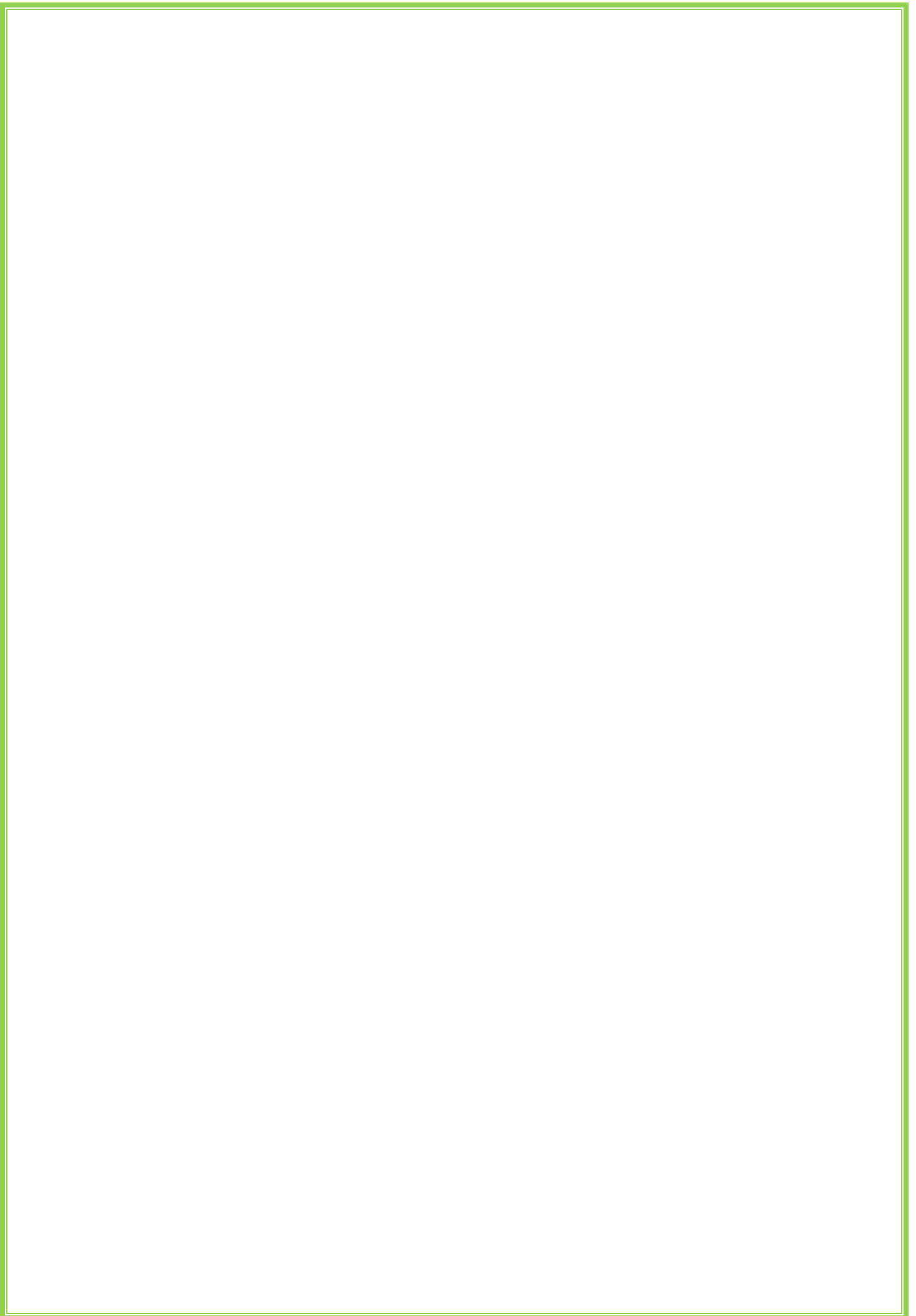
1. Long answer question from UNIT-1
2. Long answer question from UNIT-2
3. Long answer question from UNIT-3
4. Long answer question from UNIT-4
5. Long answer question from ANY UNIT

PART-II

Answer any **FOUR** questions

4x5 = 20

- .
1. SAQ from UNIT-1
 2. SAQ from UNIT-2
 3. SAQ from UNIT-3
 4. SAQ from UNIT-4
 5. SAQ from ANY one of the UNIT
 6. SAQ from anyone of the UNIT
 7. SAQ from any one of the UNIT



**IIIRDB.VOC
HORTICULTURE**

SEMESTER – V

P R GOVERNMENT COLLEGE (A), KAKINADA
B. Voc (Horticulture)
SEMESTER-V CORE -XIII
FARM MANAGEMENT AND MARKETING

UNIT I: FARM MANAGEMENT -NATURE AND SCOPE

Farm Management- meaning and scope of Farm Management –relationship with other sciences- Economic principles applied to the organization of farm business-principles of variable proportions Determination of optimum input and optimum Output-Principle of Factor substitution-principle of product substitution -Law of Equi-marginal Returns-Opportunity cost Principle-Time comparison principle, Introduction to Agricultural Economics, meaning, Scope Typical farm management decisions

UNIT II: FARM PLANNING AND BUDGETING

Types and system of Farming-Farm Planning-Meaning-Need for farm Planning-Types of Farm plans-simple farm plan and whole farm plan-characteristics of a good farm plan-basic steps in farm Planning-Farm budgeting –meaning-types of farm budgets –Enterprise Budgeting-Partial budgeting and whole farm budgeting.

UNIT III: FARM RISK MANAGEMENT

Distinction between risk and uncertainty - sources of risk and uncertainty-production and technical risks- price risk-financial risk-methods of reducing risks.

UNIT IV: AGRICULTURAL/HORTICULTURAL MARKETING – NATURE AND SCOPE

Concepts and definition of marketing-scope of agricultural marketing-classification of markets Structure, conduct-performance-market forces-demand and supply-characteristics of agricultural commodities-marketing costs and marketing margins-price spread. Marketed and marketable surplus.

PRACTICALS

1. Visit to a farm (government/ private/ corporate) to study the layout and organization
2. Visit to farm households-collection of data on cost of cultivation
3. Cost concepts -computation
4. Depreciation-methods of computing depreciation
5. Preparation of farm plans and budgets
6. Farm visit to collect information on marketing practices and marketing problems
7. Visit to village shandies/ vegetable market/ farmers markets
8. Visit to wholesale markets/commission mundies for horticultural crops
9. Visit to AGMARK laboratories/ grading centres/cold storage

SUGGESTED READINGS

1. S. S Johl, J.R. Kapur,2006, Fundamentals of Farm Business Management: Kalyani Publishers
New Delhi.
2. S. S Acharya and N.L.Agarwal, 2004, Agricultural Marketing in India, Oxford & IBH
Publishing Company, New Delhi.

BLUE PRINT FOR QUESTION SETTER

UNIT NO.	ESSAY QUESTIONS 10 MARKS	SHORT ANSWER QUESTIONS 5 MARKS	VERY SHORT ANSWER QUESTIONS 2 MARKS	MARKS ALLOTED TO THE UNIT
UNIT – 1	02	01	02	29
UNIT -2	01	01	02	19
UNIT -3	01	02	02	24
UNIT -4	01	02	02	24
Total No. of Questions	05	06	08	
Total marks Including choice				96

P R GOVERNMENT COLLEGE (A), KAKINADA
SEMESTER – V, CORE – XIII
FARM MANAGEMENT AND MARKETING
IMPORTANT QUESTION BANK

UNIT – I

ESSAYS

1. What is a farm management and its scope?
2. What are the economic principles applied to the organization of farm business?
3. What is the law of Equip-Margin returns?

SHORTS

1. What are principle of variable proportions?
2. Determination of optimum Input and optimum Output?
3. what is the time comparison principles?

UNIT – II

ESSAYS

1. What is farming? Types and systems of farming?
2. What are basic steps in farm planning.
3. Types of farm budgets.

SHORTS

1. What is whole plan farm?
2. Characteristics of good farm plan

UNIT – III

ESSAY

1. Distinction between Risk and Uncertainty

SHORTS

1. Methods of reducing risks
2. Sources of risk and uncertainty

UNIT – IV

ESSAY

1. What is the nature and scope of Marketing?
2. What are the classification of Market?
3. Characteristics of agricultural commodities.

SHORTS

1. What are the demands and force and supply of Market?
2. What are the marketing margins?
3. Marketed & Marketable Surplus
4. What is Marketing price spread?

VERY SHORTS

1. What is farming?
2. Whole plan farming
3. Basics steps in farm planning
4. Methods of reducing risks.
5. Definition of Marketing
6. What is price spread?
7. What is Agricultural Marketing?
8. What are the sources of Risk?
9. Budgeting
10. Technical risks.

P R GOVERNMENT COLLEGE (A), KAKINADA
B.Voc, HORTICULTURE LANDSCAPE MANAGEMENT
CORE - XIII
FARM MANAGEMENT AND MARKETING
MODEL QUESTION PAPER

Time: 3hrs

Marks:60

PART - I

Answer any **THREE** of the following. Draw a neat labelled diagram whenever necessary

3x10=30

1. What is a farm management and its scope?
2. What are the economic principles applied to the organization of farm business?
3. What is farming? Types and systems of farming?
4. Distinction between Risk and Uncertainty
5. What is the nature and scope of Marketing?

PART – II

Answer any **FOUR** of the following. Draw a neat labelled diagram whenever necessary

4x5=20

1. What are principle of variable proportions?
2. Determination of optimum Input and optimum Output?
3. What is whole plan farm?
4. Methods of reducing risks
5. Sources of risk and uncertainty
6. What are the classification of Market?
7. Characteristics of agricultural commodities.
8. What are the demands and force and supply of Market?

PART – III

Answer all **FIVE** questions

5x2=10

1. Definition of Marketing
2. What is price spread?
3. What is farming?
4. Whole plan farming
5. Basics steps in farm planning

P R GOVERNMENT COLLEGE (A), KAKINADA
B. Voc (Horticulture)
SEMESTER-V CORE –XIV
GENERAL PRINCIPLES OF FRUITS AND VEGETABLES PRESERVATION

UNIT I:

Importance of fruit and vegetable Preservation-Definition of preservation- Classify the different Methods of preservation. Causes of post harvest losses

UNIT II:

Principle of preservation-prevention of microbial decomposition-prevention of self-decomposition by enzymes-prevention of damage by insects, rodents, animals etc. Principles and method of preservation. Preservation by Asepsis, High Temperature, low temperature, Chemicals-Drying, filtration, carbonation, sugar salt, fermentation, acids, oil and spices, antibiotics, irradiation

UNIT III:

Unfermented fruit beverages: Preparation and preservation of unfermented fruit beverages juices, RTS, Nectar, cordial, squash, syrup, crush.

Jams, jellies and Marmalades – Procedure for preparation. Jams: Problems of Jam production.

Jelly: Important considerations in jelly making and problems of jelly preparations

UNIT IV:

Preparation of sauces and ketchups, pickle, salads.

Food laws: Fruit Product Order-Food Standardization and Regulatory agencies in India preservatives and colours permitted and prohibited in India

PRACTICALS

1. Preparation of syrups and brines
2. Preparation of Jams
3. Preparation of Jellies and marmalades
4. Preparation of RTS/ Squash/syrup
5. Preparation of Candies and preserves
6. Dehydration of Fruits and vegetables
7. Preparation of Pickles (Hot and sweet)
8. Preparation of Sauces
9. Preparation of Ketchups
10. Visit to Processing units

SUGGESTED READINGS

1. Desrosier, N. W. 1959. The Technology of Food Preservation AVI Publishing Co., Inc., Connecticut, USA.
2. Hulme, A. C. 1970. The Biochemistry of Fruits and their Products. Academic Press, London.
3. Lal, G., Siddappa, G. S and Taddon, N. G. L. 1986. Preservation of Fruits and Vegetables ICAR, New Delhi.

BLUE PRINT FOR QUESTION SETTER

UNIT NO.	ESSAY QUESTIONS 10 MARKS	SHORT ANSWER QUESTIONS 5 MARKS	VERY SHORT ANSWER QUESTIONS 2 MARKS	MARKS ALLOTTED TO THE UNIT
UNIT – 1	02	01	02	29
UNIT -2	01	01	02	19
UNIT -3	01	02	02	24
UNIT -4	01	02	02	24
Total No. of Questions	05	06	08	
Total marks Including choice				96

P R GOVERNMENT COLLEGE (A), KAKINADA
SEMESTER – V, CORE – XIV
GENERAL PRINCIPLES OF FRUITS AND PRESERVATION
IMPORTANT QUESTION BANK

UNIT – I

ESSAYS

1. Definition of preservation. Importance of vegetable preservation?
2. Classification the different methods of preservation.

SHORTS

1. Importance of fruit preservation

UNIT – II

ESSAYS

1. What are the principles of preservation? Explain the prevention of microbial decomposition?
2. What are the chemical process involved in preservation?

SHORTS

1. What is the preservation of self decomposition by enzymes?
2. what are the preservation of Asepsis high and low temperature?

UNIT –III

ESSAYS

1. Explain the unfermented fruit beverage and its preparation of juices, squash, syrup?
2. What is the procedure and preservation of Marmalades and jellies?
3. The important consideration in jelly making and problems of jelly preparation.

SHORTS

1. RTS
2. Cordial
3. Preparation of jam
4. Problems of jam

UNIT – IV

ESSAYS

1. Preparation of ketchup and its uses?
2. What are the causes for spoilage of vegetables?
3. Food standardization and regulatory agencies in India.

SHORTS

1. Pickles
2. Salads
3. Spoilage of vegetables
4. Food order product

VERY SHORTS

1. Rodents
2. Drying
3. Filtration
4. Carbonation
5. Fermentation
6. What is a crush?
7. Few problems for jelly preparation
8. What are the uses of preservation?
9. Ketchup process
10. Food law?

P R GOVERNMENT COLLEGE (A), KAKINADA
B.Voc, HORTICULTURE LANDSCAPE MANAGEMENT
SEMESTER – V, CORE – XIV
GENERAL PRINCIPLES OF FRUITS AND VEGETABLES PRESERVATION
MODEL QUESTION PAPER

Time: 3hrs

Marks:60

PART - I

Answer any **THREE** of the following. Draw a neat labelled diagram whenever necessary

3x10=30

1. Definition of preservation. Importance of vegetable preservation?
2. What are the principles of preservation? Explain the prevention of microbial decomposition?
3. Explain the unfermented fruit beverage and its preparation of juices, squash, syrup?
4. What is the procedure and preservation of Marmalades and jellies?
5. What are the causes for spoilage of vegetables?

PART – II

Answer any **FOUR** of the following. Draw a neat labelled diagram whenever necessary

4x5=20

1. Importance of fruit preservation
2. What is the preservation of self decomposition by enzymes?
3. Preparation of jam
4. Spoilage of vegetables
5. Food order product
6. Pickles
7. RTS
8. The preservation of Asepsis high and low temperature.

PART – III

Answer all **FIVE** questions

5x2=10

1. Filtration
2. Carbonation
3. Fermentation
4. Ketchup process
5. Food law?

P R GOVERNMENT COLLEGE (A), KAKINADA
B. Voc (Horticulture)
SEMESTER-V CORE -XV
PROJECT

1. Nursery visits
2. Field visits.
3. Agricultural farming
4. Documentation on Gardening
5. Methods of quarantine
6. Preparation of seedlings-Propagation Techniques

P R GOVERNMENT COLLEGE (A), KAKINADA
I B.Voc., HORTICULTURE SEMESTER-V,
PRACTICAL MODEL QUESTION PAPER

Time: 2 hrs.

TITLE: -----

Marks: 50

A. Major experiment	1x10m	= 10 marks
B. Minor experiment	3x6m	= 18 marks
C. Spotters	6x2m	= 12 marks
D. Record & Viva	5+5m	= 10 marks

	Total	- 50 marks

IIIRDB.VOC
HORTICULTURE
SEMESTER – V
Non Core Botany

P R GOVERNMENT COLLEGE (A), KAKINADA

B. Voc (Horticulture)

SEMESTER-V

Non Core botany paper-6

Soil Microbiology

Unit-1: soil micro organisms :-

Soil microbiology-definition, scope, significant developments in soil microbiology, contributions- soil as a natural medium for plant growth-microbial ecology-how does soil support microbial life-soil micro flora-plant growth promoting micro organisms(PGPR)-mycorrhiza-organic matter decomposition

Unit-2:Microbial Interactions in The Soil

A.Interactions between microbes-in the soil-positive interactions:-Proto-cooperation(synergism),commensalism,symbiosis(mutualism)-Negative Interactions:- competition,ammensalism(antibiosis or antagonism),parasitism and predation.

B.Plant-microbe interaction:- The Rhizosphere and its effects-microbial activities in rhizosphere-alteration of rhizosphere microflora-root exudates-fungistasis-techniques-rhizosphere and beneficial organisms:the Phyllosphere-Characteristic features of phyllosphere micro flora-phylosphere effect-microbial communities on leaves-microbial productd influencing plant growth

Unit-3:Microbes & nutrient cycles:

Carbon cycle-oxygen, sulphur , phosphorous, iron cycles-nitrogen cycles-nitrification & denitrification- biological nitrogen fixation-“N” fixers-biofertilizers (Biodegradation of Pesticides and Pollutants)

Unit-4:Soil Microbes in Bio remediation & Soil Microbial studies

A.Bioremediation:-Biomagnification & Bioremediation-fungi,Bacteria in Bioremediation-Fate of pesticides in Soil-Pesticide degrading soil microorganisms-micrbes in solid waste disposal (Sanitary land fills & land reclamation)-Composting

B.Methods used in soil microbial studies -sterilization methods – direct microscopic examination of soil-chemical methods-methods for assaying antibiotics and molecular methods in soil microbiology.

P R GOVERNMENT COLLEGE (A), KAKINADA

B. Voc (Horticulture)

SEMESTER-V

Non Core botany paper-7

Agriculture Microbiology

Unit-1:Microbes & Soil Fertility

A.Microbes in rhizosphere and Phyllosphere

B.Plant Growth – Promoting microorganisms –

mycorrhiza,rhizobia,azospirillum,azotobacter,cyanobacteria,Frankia

C.Outlines of biological nitrogen fixation (non-symbiotic)

Unit-2:Microbes & Plant diseases

A.a general account of different plant pathogens:virus,bacteria

B.symptoms,causal organism,disease cycle-environmental relations,management & control of following plant diseases : 1.Viral:bunchy top of banana.,tungro of rice 2.Bacterial:citrus canker.,bacterial blight of rice

C.Biological control of plant diseases.biopesticides-biopesticides-nucleopolyhedrovirus (NPV),Bacillus thuringiensis,Pseudomonas fluorescens & Trichoderma viridae

Unit-3:Microbes in environment

A. Microorganisms of environment(soil,water & air)

B.Role of micro organisms in nutrient cycling(carbon, nitrogen, phosphorous, sulphur)

C.Microbial interactions -mutualism, commensalism, antagonism, competition, parasitism, predation

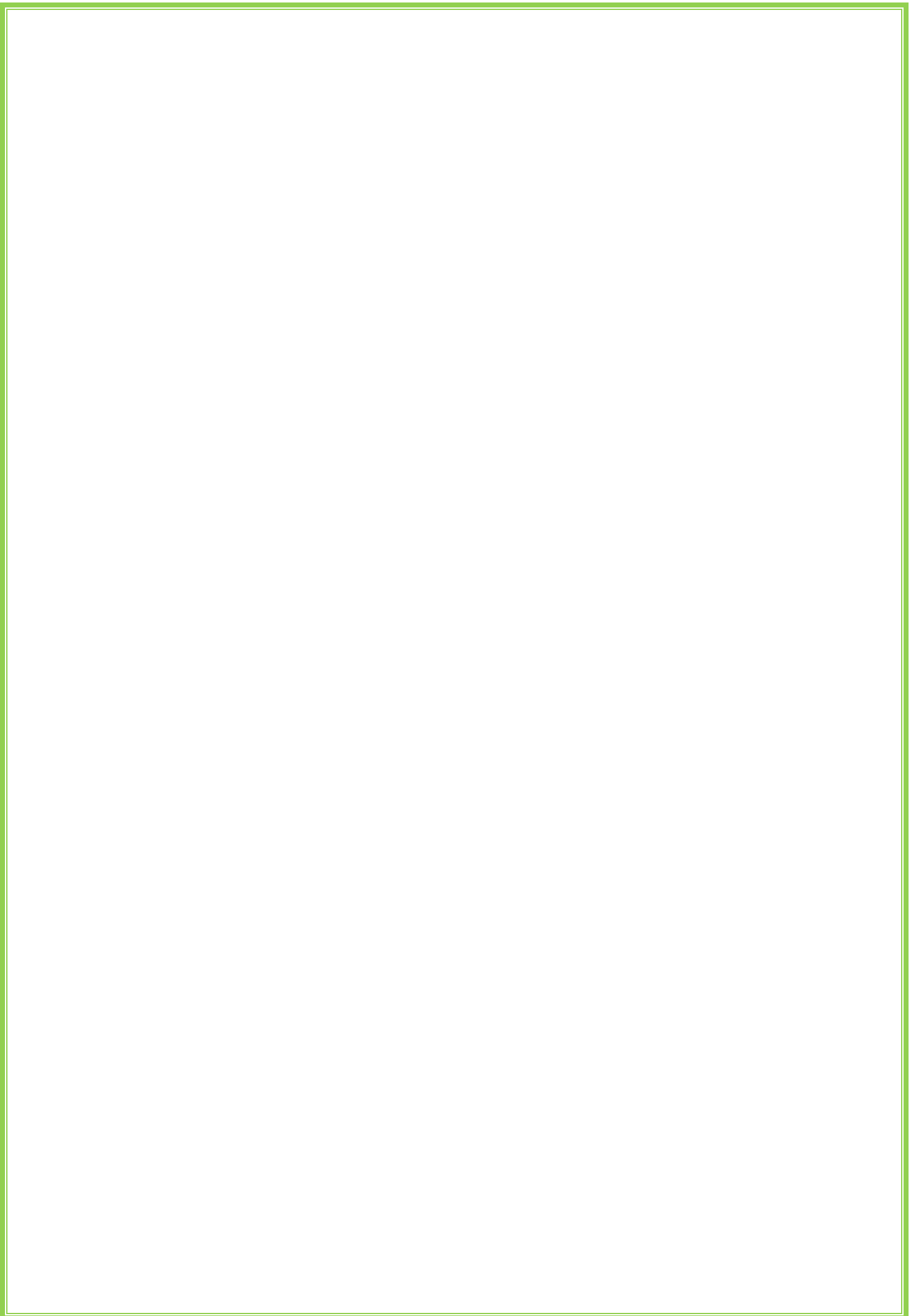
Unit-4:Microbes in pollution control

A.Microbes in portable and polluted waters.E.coli & Streptococcus faecalis as indicators of water pollution.

B.Sanitation of portable water.sewage treatment (primary,secondary & tertiary).outlines of biodegradation of environmental pollutants – pesticides.

C.Solid waste disposal- sanitary landfills,composting

D.Microbiology of air & air sampling methods.



**IIIRD B.VOC
HORTICULTURE
SEMESTER – VITH**

P R GOVERNMENT COLLEGE (A), KAKINADA
B.Voc (Horticulture)
SEMESTER-VI CORE -XI
RECENT ADVANCES IN HORTICULTURE

UNIT-I

Watershed management objectives, approaches, steps in watershed development. Importance and principles of organic farming in horticultural crops, sources and importance of organic matter.

UNIT-II

Flower arrangement – Ikebana & western trend, Principles of flower arrangement, tools & equipment, dehydrated flowers, dehydration methods, maintenance of flower shape, procedure for embedding, pot –pourri.

UNIT-III

Bonsai – Suitable plants for Bonsai; Aesthetics with plant parks, classification of Bonsai, requirements of Bonsai pot, Training and pruning, potting & repotting, general care.
Terrarium culture.

UNIT-IV

Apiculture, bee-keeping flora in India, bee-keeping technology, equipment, Honey extraction.
Mushroom production nutritional aspects, recipes. Home scale industry prospects

PRACTICALS

1. Visit to Mushroom production unit.
2. Classification of Bonsai and Steps of growing a Bonsai.
3. Flower arrangement in different styles.
4. Preparation of bouquets.
5. Terrarium Culture.
6. Visit to Apiculture unit.
7. Visit to Drip-Micro irrigation project areas of horticultural farms
8. Visit to local vermin-compost unit.
9. Visit to watershed management centre.

SUGGESTED READINGS

1. Neol Kings bury, 1997. The ultimate planting guide.
2. Chada, K. L and Grewal, J. S. Advances in Horticulture Volume 2,3,4,6 and 12. ICAR, Malhotra Publishing House, New Delhi.
3. Sharma, V. K. Advances in Horticulture. Deep & Deep Publication Pvt. Limited, New Delhi, India.

BLUE PRINT FOR QUESTION SETTER

UNIT NO.	ESSAY QUESTIONS 10 MARKS	SHORT ANSWER QUESTIONS 5 MARKS	VERY SHORT ANSWER QUESTIONS 2 MARKS	MARKS ALLOTTED TO THE UNIT
UNIT – 1	02	01	02	29
UNIT -2	01	01	02	19
UNIT -3	01	02	02	24
UNIT -4	01	02	02	24
Total No. of Questions	05	06	08	
Total marks Including choice				96

P R GOVERNMENT COLLEGE (A), KAKINADA
SEMESTER – VI, CORE – XVI
RECENT ADVANCES IN HORTICULTURE
IMPORTANT QUESTION BANK

UNIT – I

ESSAY

1. Explain watershed management? what are the steps involved in watershed management?

SHORTS

1. Importance of organic farming in horticultural crops.
2. What are the source and the importance of organic matter?
3. Principles of organic farming.

UNIT –II

ESSAY

1. What is flower arrangement – Ikebana & Western trend and its principles?

SHORTS

1. Tools Equipment used in flower arrangement
2. Explain the methods of Dehydration?
3. What are the basic steps for maintenance of flower shape?
4. Procedure of embedding?

UNIT –III

ESSAYS

1. What is a Bonsai? Which type of plants are suitable for Bonsai? Aesthetics with plant parks
2. Explain the classification of Bonsai?

SHORTS

1. Requirement of Bonsai pots
2. Training and pruning in Bonsai plants
3. Potting & Repotting
4. What is the general care towards Bonsai plants?

UNIT – IV

ESSAY

1. What is Apiculture? Bee-keeping in India and the technology used in Bee-keeping.
2. What is the process of production of Mushroom and its nutritional Aspects?

SHORTS

1. What are the equipment used in Bee-keeping?
2. What are the steps involved in extraction of Honey?
3. What is the home scale industry prospects?

VERY SHORTS

1. What is vermiculite?
2. What is Organic Farming?
3. Apiculture
4. What is Dehydration?
5. Few types of Honey Bee.
6. Varieties of Mushrooms
7. What are the uses of Repotting?
8. Foraging
9. What is potting?
10. Process of Repotting.

P R GOVERNMENT COLLEGE (A), KAKINADA
B.Voc, HORTICULTURE LANDSCAPE MANAGEMENT
SEMESTER – VI, CORE – XVI
RECENT ADVANCES IN HORTICULTURE
MODEL QUESTION PAPER

Time: 3hrs

Marks :60

PART – I

Answer any **THREE** of the following. Draw a neat labelled diagram whenever necessary

3 x 10 = 30

1. Explain watershed management? what are the steps involved in watershed management?
2. What is flower arrangement – Ikebana & Western trend and its principles?
3. Explain the classification of Bonsai?
4. What is Apiculture? Bee-keeping in India and the technology used in Bee-keeping.
5. What is a Bonsai? Which type of plants are suitable for Bonsai? Aesthetics with plant parks.

PART – II

Answer any **FOUR** of the following. Draw a neat labelled diagram whenever necessary

4x5=20

1. What are the source and the importance of organic matter?
2. Explain the methods of Dehydration?
3. What are the basic steps for maintenance of flower shape?
4. Training and pruning in Bonsai plants
5. Potting & Repotting
6. What are the equipment used in Bee-keeping?
7. What are the steps involved in extraction of Honey?
8. What is the home scale industry prospects?

PART – III

Answer all **FIVE** questions

5x2=10

1. Vermiculite
2. What is Dehydration?
3. Few types of Honey Bee.
4. Varieties of Mushrooms
5. What are the uses of Repotting?

P R GOVERNMENT COLLEGE (A), KAKINADA
B. Voc (Horticulture)
SEMESTER-VI CORE –XII
POST HARVESTING TECHNOLOGY OF HORTICULTURAL CROPS

UNIT-I

Importance of Post-harvest technology of horticultural crops-post harvest losses in the Country- Loss of revenue in the country. Physiological and Biochemical changes: Physiological – Softening, Physiological loss in weight (PLW), texture, respiration and transpiration, Bio-chemical changes – Change in carbohydrates, organic acids, pigments, phenolic compounds, flavoring compounds, enzyme activity.

Study of Maturity – definition of maturity, different methods of judge maturity in horticultural crops like Mango, Banana, Citrus, Papaya, Brinjal, Tomato, Bhendi, coconut, oil palm.

UNIT-II

Physico-chemical changes during development, ripening, storage of fruits and vegetables.

Methods of storage and transportation of horticultural crops

Study of Harvesting, grading, packaging and storage of Fruit crops like Mango, Banana, Citrus, Papaya.

UNIT-III

Study of Harvesting, grading, packaging and storage of vegetable crops like Brinjal, Tomato, Bhendi, Onion, melons and pumpkin.

Study of Harvesting, grading, packaging and storage of plantation crops like coconut, cashew, coffee, oil palm.

UNIT-IV

Study of Harvesting, grading, packaging and storage of medicinal crops like Rauvulfia, Cinchona, Senna.

Study of Harvesting, grading, packaging and storage of flower crops like Roses, gladiolus, gerbera, chrysanthemum.

PRACTICALS

1. Practice in judging the maturity of various horticultural produce
2. Determination of physiological loss in weight and quality
3. Grading of horticultural produce
4. Packing studies in fruits, vegetables by using different packing material
5. Packing studies in plantation crops and cut flowers by using different packing material
6. Methods of storage
7. Methods of transportation
8. Identification of storage pests and diseases
9. Visit to markets, packing houses and cold storages
10. Packing studies in plantation crops and cut flowers by using different packing material

SUGGESTED READINGS

1. Venkatarathnam, L. 1988. Packaging of Fruits and Vegetables in India Agri-Horticultural Society, Hyderabad.
2. Salunkhe, D. K., Bhatt, N. R and Desai, B. B. 1990. Post-harvest Biotechnology of Flowers and Ornamental Plants. Nayaprakash, Calcutta.
3. Pandey, P. H. 1998. Principles and Practice of Post-Harvest Technology. Kalyani Publishers, Ludhiana.

BLUE PRINT FOR QUESTION SETTER

UNIT NO.	ESSAY QUESTIONS 10 MARKS	SHORT ANSWER QUESTIONS 5 MARKS	VERY SHORT ANSWER QUESTIONS 2 MARKS	MARKS ALLOTTED TO THE UNIT
UNIT – 1	02	01	02	29
UNIT -2	01	01	02	19
UNIT -3	01	02	02	24
UNIT -4	01	02	02	24
Total No. of Questions	05	06	08	
Total marks Including choice				96

P R GOVERNMENT COLLEGE (A), KAKINADA
SEMESTER – VI, CORE –XVII
POST HARVEST TECHNOLOGY OF HORTICULTURAL CROPS
IMPORTANT QUESTION BANK

UNIT – I

ESSAYS

1. What is post-harvest technology of horticultural crops and its importance?
2. What are the post-harvest losses in the country?
3. What are the Bio-chemical changes?
4. What is Maturity? Judge maturity in Bhendi.
5. Different methods of judge maturity in coconut.

SHORTS

1. What is the physiological loss in weight?
2. Different methods of judge maturity in Banana.
3. What is Respiration & Transpiration?
4. Loss of Revenue in country.

UNIT – II

ESSAY

1. What are the methods of storage and transportation of Horticultural crops?

SHORTS

1. Physical changes during development of fruits
2. Harvesting and packaging process of the citrus.
3. Grading and storage of Banana.
4. Harvesting and storage of Papaya.

UNIT – III

ESSAYS

1. The study of harvest, grading, packing and storage of pumpkin.
2. The study of Harvesting, grading and packaging and storage of plantation crop like Coffee.

SHORTS

1. Grading and packaging of Brinjal.
2. Harvesting and storage of Melons
3. Harvesting and packaging process of Oil palm.

UNIT – IV

ESSAYS

1. The study of Harvesting, Grading, packaging and storage of Rauvulfia?
2. The study of Harvesting, Grading, Packaging, and Storage of Chrysanthemum?

SHORTS

1. Harvesting and storage of Senna.
2. Grading and packaging of Gladiolus.
3. Harvesting and packaging of Gerbera.

VERY SHORTS

1. What is Phenolic compounds?
2. Flavoring compound.
3. Uses of cinchona
4. What are plantation crops?
5. Storage of onion
6. Grading of Mango
7. What is a Maturity?
8. What is enzyme activity?
9. Grading of coconut
10. Uses of Medicinal crop's

P R GOVERNMENT COLLEGE (A), KAKINADA
B.Voc, HORTICULTURE LANDSCAPE MANAGEMENT
SEMESTER – VI, CORE - XVII
POST HARVESTING TECHNOLOGY OF HORTICULTURAL CROPS
MODEL QUESTION PAPER

Time: 3hrs

Marks:60

PART - I

Answer any **THREE** of the following. Draw a neat labelled diagram whenever necessary

3x10= 30

1. What is post-harvest technology of horticultural crops and its importance?
2. Different methods of judge maturity in coconut.
3. What are the methods of storage and transportation of Horticultural crops?
4. The study of harvest, grading, packing and storage of pumpkin.
5. The study of Harvesting, Grading, packaging and storage of Rauvulfia?

PART – II

Answer any **FOUR** of the following. Draw a neat labelled diagram whenever necessary

4x5=20

1. What is the physiological loss in weight?
2. Different methods of judge maturity in Banana.
3. Physical changes during development of fruits
4. Harvesting and packaging process of the citrus.
5. Harvesting and storage of Melons
6. Harvesting and packaging process of Oil palm.
7. Harvesting and storage of Senna.
8. Grading and packaging of Gladiolus.

PART – III

Answer all **FIVE** questions

5x2=10

1. What is Phenolic compounds?
2. Flavoring compound.
3. Uses of cinchona
4. What are plantation crops?
5. Storage of onion

P R GOVERNMENT COLLEGE (A), KAKINADA
B. Voc (Horticulture)
SEMESTER-VI CORE –XVIII
ORGANIC FARMING

UNIT-I

A. What is Organic Farming?

B. Why Organic Farming?

Detrimental effects of currently chemical dependent farming.

- Reduction of crop production due to depletion of soil Health.
- Pesticide contamination and human health hazard.
- Contamination of food products by pesticides & chemicals.
- Environmental (soil, water, air) pollution.
- Reduction of natural enemies of crop pests.
- Threat to Bio diversity.
- Historical development of Organic Agriculture in India.
- Present status of Organic farming in Andhra Pradesh.

UNIT-II

Types of Farming (Advantage & disadvantage of each system);

- Pure Organic Farming – Definition, Concept & Benefits
- Integrated Farming system (Combination of Organic and Inorganic)
- Mixed Farming
- Inter cropping

Organic Farming (Process):

- Concept of farming system
- Developing organic farms
- Important steps & methods

UNIT-III

- Sources of nutrients for Organic farming
- Organic Manure
- FYM/Rural compost, City compost, Oil cakes,
- Animal wastes, Vermi composts, etc
- Characterization and Nutrients content of the above sources
- Green Manure
- Liquid Manure
- Bio fertilizers

UNIT-IV

Plant Protection Measures:

- Integrated pest & disease managements.
- Organic pesticides, bio-pesticides.
- Inorganic pesticides, disadvantages of their use.
- Seed, seedling and soil Treatment measures.
- Feasibility of complete dependence on organic sources
- Organic Agri-Horticulture in Urban & Semi urban areas.
- Quality Control and certification procedures of Organic products.

PRACTICALS

1. Selection of soil and soil conditioners
2. Preparation of FYM / Rural compost / Vermi compost
3. Preparation of seed bed & raising of seedlings
4. Land preparation
5. Raising of seedlings in pots or seed pans
6. Undertaking pot / container culture of flowers, vegetables, fruit plants
7. Practice training on interculture operations
8. Visit to near Organic Farming at farmer field

SUGGESTED READINGS

1. Steve Gilman. Organic soil fertility management.
2. Sapna E. Thottathil. India's Organic Farming Revolution.
3. Pradyumna Tripathy and Umesh Thapa. Organic Farming in India.

BLUE PRINT FOR QUESTION SETTER

UNIT NO.	ESSAY QUESTIONS 10 MARKS	SHORT ANSWER QUESTIONS 5 MARKS	VERY SHORT ANSWER QUESTIONS 2 MARKS	MARKS ALLOTTED TO THE UNIT
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Total No. of Questions	05	06	08	
Total marks Including choice				96

P R GOVERNMENT COLLEGE (A), KAKINADA
I B.Voc., HORTICULTURE SEMESTER-VI,
PRACTICAL MODEL QUESTION PAPER

Time: 2 hrs.

TITLE: -----

Marks: 50

A. Major experiment	1x10m	= 10 marks
B. Minor experiment	3x6m	= 18 marks
C. Spotters	6x2m	= 12 marks
D. Record & Viva	5+5m	= 10 marks

	Total	- 50 marks

P R GOVERNMENT COLLEGE (A), KAKINADA
SEMESTER – VI, CORE – XVIII
ORGANIC FARMING
IMPORTANT QUESTION BANK

UNIT – I

ESSAY

1. What is an organic farming?
 - a. Reduction of crop production due to depletion of soil health
 - b. Reduction of natural enemies of crop pests

SHORTS

1. Environment pollution
2. Pesticide contamination and human health hazard.
3. Present status of organic farming in A.P.

UNIT – II

ESSAYS

1. Types of Farming
 - a. Integrated farming system
 - b. Mixed farming
2. Organic farming
 - a. Concepts of farming system
 - b. Important steps and methods involved init.

SHORTS

1. Definition of pure organic farming. Concepts& Benefits?
2. Development of organic farms
3. Combination of Inorganic farming system.

UNIT – III

ESSAY

1. What are the sources of nutrients for organic farming?
 - a. Organic manure
 - b. FYM
 - c. Animal waste, vermicost

SHORTS

1. Preparation of Vermicompost
2. What is Green manure?
3. Explain Bio fertilizers

UNIT – IV

ESSAYS

1. Integrated pest & Disease management
2. Organic agro& horticulture in Urban & semi urban areas
3. Seed, Seedling and soil treatment measures.

SHORTS

1. Bio-pesticides
2. Inorganic pesticide, Disadvantages and their uses.
3. Feasibility of complete dependence on organic sources
4. Certification procedures of organic products.

VERY SHORTS

1. What is a quality control?
2. Water pollution
3. Advantages of farming.
4. Inter cropping.
5. Uses of Oilcakes
6. Advantages of animal manures
7. What is Rural compost?
8. Uses of soil treatment
9. What are the organic pesticides?
10. soil pollution.

P R GOVERNMENT COLLEGE (A), KAKINADA
B.Voc, HORTICULTURE LANDSCAPE MANAGEMENT
SEMESTER – VI, CORE – XVIII
ORGANIC FARMING
MODEL QUESTION PAPER

Time: 3hrs

Marks:60

PART - I

Answer any **THREE** of the following. Draw a neat labelled diagram whenever necessary

3x10=30

1. What is an organic farming?
 - a. Reduction of crop production due to depletion of soil health
 - b. Reduction of natural enemies of crop pests
2. Types of Farming
 - a. Integrated farming system
 - b. Mixed farming
3. Organic farming
 - a. Concepts of farming system
 - b. Important steps and methods involved init.
4. What are the sources of nutrients for organic farming?
 - a. Organic manure
 - b. FYM
 - c. Animal waste, vermicost
5. Integrated pest & Disease management

PART – II

Answer any **FOUR** of the following. Draw a neat labelled diagram whenever necessary

4x5=20

1. Environment pollution
2. Pesticide contamination and human health hazard.
3. Definition of pure organic farming. Concepts& Benefits?
4. Development of organic farms
5. Combination of Inorganic farming system.
6. Preparation of Vermicompost
7. Feasibility of complete dependence on organic sources
8. Certification procedures of organic products.

PART – III

Answer all **FIVE** questions

5x2=10

1. What is a quality control?
2. Water pollution
3. Uses of soil treatment
4. What are the organic pesticides?
5. Soil pollution.

