ANDHRA UNIVERSITY
VISAKHAPATNAM

B. Vocational

Agriculture (Honours)

UGC- NATIONAL SKILLS QUALIFICATIONS FRAMEWORK

SYLLABUS

For

1st to 8th Semesters

2025-2026 Admitted batch

B.VOC (HONOURS) AGRICULTURE 2025-26 BATCH			
Sl. No.	**Course Title**	**Category**	**Total Credits**
1st year - Semester – I			
1	Basics in Crop Production and Crop Protection	Major – core	3+1=4
2	Basics of Agricultural Sciences	Major – core	3+1=4
3	AECC- English	Language	3+0=3
4	AECC – MIL (Telugu/Sanskrit/Hindi)	Language	3+0=3
5	Intro to Artificial Intelligence	Skill Enhancement course (SEC)	4+0=4
	End of Semester I of 1st Year		**16+2=18**
1st year - Semester – II			
1	Principles of Agronomy	Major – core	3+1=4
2	Introduction to soil science	Major – core	3+1=4
3	English	Language	3+0=3
4	MIL (Telugu/ Hindi /Sanskrit)	Language	3+0=3
5	Introduction to social work	Multi-disciplinary course	2+0=2
6	Application of Artificial Intelligence (Discipline specific)	Skill Enhancement course (SEC)	4+0=4
7	Indian Knowledge system		0+0=0
8	Community service project of 80 hours with 1 credit. **Student is eligible for Exit option-1 with the award of Certificate**		1
	End of Semester II of 1st year		**18+3=21**
2nd year - Semester – III			
1	Agronomy of field crops	Major – core	3+1=4
2	Introduction to Entomology	Major – core	3+1=4
3	Introduction to Plant Pathology	Major – core	3+1=4
4	Fundamentals of genetics	Minor	3+1=4
5	AECC (Creative writing/ Business writing in English)	Language	3+0=3
6	AECC (Creative writing/ Journalistic Writing in MIL- Telugu/ Hindi /Sanskrit)	Language	3+0=3
7	Introduction to public administration	Multi-disciplinary course	2+0=2
8	Plant Nursery	Skill enhancement course (SEC)	2+0=2
	End of Semester III of 2nd year		**22+4=26**

2nd Year - Semester – IV			
1	Pests of field crops and their management	Major – core	3+1=4
2	Diseases of field and horticultural crops and their management	Major – core	3+1=4
3	Principles of plant breeding	Major – core	3+1=4
4	Horticulture	Minor	3+1=4
5	Fundamentals of Economics	Multi-disciplinary course	2+0=2
6	Agriculture marketing	Skill enhancement course (SEC)	2+0=2
	End of Semester IV of 2nd year		**16+4=20**
3rd Year - Semester – V			
1	Rain fed Agriculture and watershed management	Major – core	3+1=4
2	Fundamentals of Crop Physiology	Major – elective	3+1=4
3	Pests of horticultural crops and productive Entomology	Major – elective	3+1=4
4	Principles of Seed technology	Minor	3+1=4
5	Introduction to Production Economics and Farm Management	Minor	3+1=4
6	Environmental Education		2+0=2
	End of Semester V of 2nd year		**17+5=22**
3rd Year - Semester – VI			
1	Manures, fertilizers and soil fertility management	Major – elective	3+1=4
2	Weed and water management	Major – elective	3+1=4
3	Production technology of Fruits and Vegetables	Minor	3+1=4
4	Principles of Organic farming	Minor	3+1=4
5	Semester Internship (Minimum of 180 hours (8 weeks) with 3 credits)		3
	End of Semester VI of 3rd Year		**12+7=19**
Student is eligible for Exit option-2 with the award of Degree in respective discipline			
4th Year - Semester – VII			
1	Agricultural microbiology	Major – core	3+1=4
2	Insect ecology and integrated pest management	Major – core	3+1=4
3	Farm power and machinery	Major – core	3+1=4
4	Post-harvest management and value addition of Fruits and Vegetables	Major – elective	3+1=4

5	Farming systems and Sustainable agriculture	Major – elective	3+1=4
6		Open online transdisciplinary course	2+0=2
7		Indian knowledge system- Audit course	-
	End of Semester VII of 4th Year		**17+5=22**
4th Year - Semester – VIII			
1	Principles of Plant Biotechnology	Major – core	3+1=4
2	Breeding of field crops	Major – core	3+1=4
3	Fundamentals of rural sociology and extension education	Major – core	3+1=4
4	Floriculture	Major – elective	3+1=4
5	Entrepreneurship development	Major – elective	3+1=4
6		Open online transdisciplinary course	2+0=2
7		Indian knowledge system- Audit course	-
	End of Semester VIII of 4th Year		**17+5=22**

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CURRICULUM FRAME WORK

B.Voc Agriculture (Honours) 2025-26
ADMITTED BATCH

Subjects	Semester I	Semester II	Semester III	Semester IV	Semester V	Semester VI	Semester VII	Semester VIII	Total credits
English	3+0=3	3+0=3	3+0=3						9+0=9
Telugu	3+0=3	3+0=3	3+0=3						9+0=9
Multidisciplinary Courses		2+0=2	2+0=2	2+0=2					6+0=6
Skill enhancement Courses	4+0=4	4+0=4	2+0=2	2+0=2					12+0=12
Major subjects	6+2=8	6+2=8	9+3=12	9+3=12	9+3=12	6+2 = 8	9+3=12	9+3=12	63+21=84
Minor subjects			3+1=4	3+1=4	6+2=8	6+2=8			18+6=24
OOTC							2+0=2	2+0=2	4+0=4
Environmental education					2+0=2				2+0=2
CSP		0+1=1							0+1=1
Major - Elective							6+2=8	6+2=8	12+4=16
Long-term internship						0+3=3			0+3=3
Total	16+2=18	18+3=21	22+4=26	16+4=20	17+5=22	12+7=22	17+5=22	17+5=22	135+35=170

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
I Year Semester – I

1	**Basics in Crop Production and Crop Protection**	**Major – core**	**3+1=4**
2	**Basics of Agricultural Sciences**	**Major – core**	**3+1=4**
3	**AECC- English**	**Language**	**3+0=3**
4	**AECC – MIL (Telugu/Hindi/Sanskrit)**	**Language**	**3+0=3**
5	**Intro to Artificial Intelligence**	**Skill Enhancement course (SEC)**	**4+0=4**
		TOTAL	**16+2=18**

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
I Year Semester – I
BASICS IN CROP PRODUCTION AND CROP PROTECTION (Major - Core)
(CREDITS 3+1=4)

UNIT –I: INTODUCTION TO AGRONOMY

- Importance and scope of Agriculture, Definition- Branches of agriculture - History of Agricultural development in the World and India.
- Agroclimatic zones- Agronomy - Definition - Importance - Meaning and scope - Agro- climatic zones of Andhra Pradesh & India.

UNIT-II: INTRODUCTION TO SOIL SCIENCE

- Definition of soil, Soil as a Natural Body.
- Soil separates, texture, Aggregation and Structural Characters, Temperature and Color,

UNIT-III: INTRODUCTION TO GENETICS

- De-oxyribo Nucleic Acid (DNA) and its structure – Watson and Crick model functions and types of DNA
- Modes of DNA replication – semi-conservative DNA replication – experimental proof; Ribo Nucleic Acid (RNA) – structure, function and types – messenger RNA (mRNA), ribosomal RNA (rRNA) and transfer RNA (tRNA) – differences between DNA and RNA
- Genetic code – properties of genetic code – central dogma – outline of protein synthesis – transcription and translation

UNIT –IV: INTRODUCTION TO ENTOMOLOGY

- Position of insects in the animal kingdom. Reasons for insect dominance.
- General organisation of insect body wall - structure and function, cuticular appendages, moulting; Body regions - insect head, thorax and abdomen, their structure and appendages.

UNIT – V: INTRODUCTION TO PLANT PATHOLOGY

- Introduction to plant diseases and their causal organisms
- History, Importance of plant diseases, scope and objectives of Plant Pathology.
- Important plant pathogenic organisms, Classification of Plant Diseases Binomial system of nomenclature, rules of nomenclature

REFERENCES

- Reddy, S R and Reddi Ramu 5th edition 2016, -kalyani publishers, Ludhiana.
- Indian Society of Soil Science.2012. Fundamentals of Soil Science. IARI, New Delhi.
- Gupta, P.K. 1985. Cytology, Genetics and Cytogenetics. Rastogi Publications, Meerut. Gupta, P.K. 2007. Genetics. Rastogi Publications, Meerut
- Introduction to Principles of Plant Pathology – Singh R. S. 1984. Oxford & IBH Publishing Co., New Delhi

BASICS IN CROP PRODUCTION AND CROP PROTECTION PRACTICAL

1. Identification of Major Crops & Their Agronomic Characters
2. Study of Agro-Climatic Zones of India & Andhra Pradesh
3. Study of Soil Profile and Collection of Soil Samples
4. Determination of Soil Texture by Feel Method
5. Study of DNA and RNA Models
6. Study of the Moulting (Ecdysis) Process in Insects
7. Study of External Features of Insects
8. Identification of Common Plant Diseases (Field/Lab Observation)

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
I Year Semester – I
BASICS IN CROP PRODUCTION AND CROP PROTECTION
(Major Core)
(CREDITS 3+1=4)
MODEL QUESTION PAPER

Time: 3 Hours **Maximum Marks:70**

SECTION – A

Answer any **FOUR** questions. Each question carries equal marks. (4*5 = 20)

1. Define Agronomy? Discuss about its scope & importance briefly.
2. Write a note on Agro Climatic Zones of Andhra Pradesh.
3. Define Soil? Why it is called OS natural body?
4. What do you mean by soil texture and soil structure?
5. Write the Properties of Genetic code.
6. Write about types of DNA & RNA.
7. Write about types of Insect Head.

SECTION – B

Answer **All** the questions. Each question carries **TEN** marks (5*10 = 50)

1. a) Write about the History of agricultural development in the world.

(OR)

b) Write about the classification of soil texture and soil structure.

2. a) Define Agronomy and give its scope and the importance.

(OR)

b) Write about the soil temperature and soil colour

3. a) Write about the central dogma and explain protein synthesis

(OR)

b) Explain Semi Conservative method of replication.

4. a) Explain about different body regions of an insect

(OR)

b) Give an account on reasons for insect dominance

5. a) Write about importance, scope and objectives of plant pathology

(OR)

b) Elaborate the classification of plant disease.

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
I Year Semester – I
BASICS OF AGRICULTURAL SCIENCES (Major - Core)
(CREDITS 3+1=4)

UNIT -I

INTODUCTION TO PLANT BREEDING

- Historical development, concept, nature, objectives and role of plant breeding.
- Modes of reproduction and apomixes

UNIT-II:

INTRODUCTION TO CROP PHYSIOLOGY

- Introduction to Crop Physiology and its importance in agriculture
- Plant cell - The endomembrane system - Plasma membrane, endoplasmic reticulum, nuclear envelope, golgi apparatus, vacuole and endosomes - Structure and functional characteristics-Plastids, mitochondria, oil bodies, peroxisomes and glyoxysomes - Structure and functions.

UNIT-III:
INTRODUCTION TO AGRICULTURAL MICROBIOLOGY

- Introduction to microbiology importance of different microbial groups importance of microorganisms:
- History of microbiology role of microbes in fermentation
- Germ theory of diseases koch's postulates: pure culture methods

UNIT –IV:

INTRODUCTION TO HORTICULTURE

- Horticulture – Definition - Divisions of horticulture with suitable examples.
- Scope and importance of horticulture - Importance of horticulture in terms of income, employment generation, industry, religious, aesthetic, food & nutritive value and export.
- Horticultural classification based on soil, climate and botanical classification.
- Climate and soil for horticultural crops - Influence of environmental factors on horticultural crop production – Temperature, humidity, wind, rainfall and solar radiation – Influence of soil factors – Soil type, pH, EC.

UNIT – V:

INTRODUCTION TO FARM POWER AND MACHINERY

- Farm Power in INDIA – Introduction- Different sources of farm power- Merits and demerits of farm sources- status of farm power in India.
- Farm mechanization- Scope- Concept of farm mechanization
- Classifications of energy sources- Renewable- Non- renewable- Need of renewable energy sources- Types of renewable energy sources- Solar energy- Wind energy- Biogas
- Heat engines- Introduction- Types- External combustion engine- Internal combustion engine- Classification of IC engine - Two stroke and four stroke engine- Diesel engine- Petrol engine.

REFERENCES

- Chadha, K.L. 2001. *Handbook of Horticulture.* ICAR, New Delhi.
- Jitendra Singh, 2012. *Basic Horticulture*. Kalyani Publishers. New Delhi.
- Plant Breeding: Principles & Practices by JR Sharma,
- JagdishwarSahay (1977), Elements of Agricultural Engineering, Standard Publications, New Delhi

BASICS OF AGRICULTURAL SCIENCES PRACTICAL

1. Study of Reproductive Systems in Crop Plants

2. Study of Plant Cell Organelles

3. Study of Microscope

4. Study of Culture Media and Sterilization Techniques

5. Identification of Horticultural Crops (Fruits, Vegetables, Flowers)

6. Study of Environmental Factors on Horticultural Crops

7. Study of Farm Power Sources

8. Farm Equipment in Agriculture and Horticulture

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
I Year Semester – I
BASICS OF AGRICULTURAL SCIENCES (Major - Core)
(Credits 3+1=4)
MODEL QUESTION PAPER

Time: 3 Hours **Maximum Marks:70**

SECTION – A

Answer any **FOUR** questions. Each question carries equal marks. (4*5 = 20)

1. Write the objectives of the plant breeding
2. What are the Future prospects of the plant breeding
3. Write about the structure and functions of Endoplasmic Reticulum
4. Explain about different microbial groups.
5. Write about the Scope of horticulture in India.
6. What are the different sources of farm power and give the merits and demerits of farm sources
7. Give the Importance of horticulture in terms of export.

SECTION – B

Answer **All** the questions. Each question carries **TEN** marks (5*10 = 50)

1. a) Write about the structure and functions of mitochondria and Ribosomes

   (OR)

   b) Germ theory of diseases koch's postulates: pure culture methods
2. a) Give an account of the classification of horticulture.

   (OR)

   b) Describe the influence of climatic factors on horticultural crop production.
3. a) Write about sexual reproduction in plants.

   (OR)

   b) Write about objectives and scope of plant breeding.
4. a) Write about the classification of IC engine with their characteristics.

   (OR)

   b) Write an essay on various types of renewable energy resources.
5. a) Write about the importance of microorganisms and role of microbes in fermentation.

   (OR)

   b) Explain the divisions of horticulture.

ANDHRA UNIVERSITY
B. Vocational course
AGRICULTURE - Honours
I Year – Semester I
2025-26 Admitted batch
English
(Credits 3+0=3)

Unit I

• Poem: Coromandel Fishers –Sarojini Naidu
• Short Story: The Night Train at Deoli –Ruskin Bond
• Parts of Speech

Unit II

• Short Story: The Lost Child –Mulk Raj Anand
• Prose: Letter to a Teacher –School of Barbiana
• Articles and Prepositions

Unit III

• Poem: Where the Mind is Without Fear –Rabindranath Tagore
• Speech: How Dare You –Greta Thunberg (Open Source)
• Question tags.

Unit IV

• Poem: Night of the Scorpion –Nissim Ezekiel
• One Act Play: Refund –Fritz Karinthy
• Tenses

Unit V

• Short Story: An Astrologer's Day –R. K. Narayan
• Phonetics: Basic Sounds and Word Stress
• Intonation and Homophones

Suggested Classroom Activities (Unit-wise)

Unit I

• Speaking activity: My village/town .

Unit II

• Story telling and letter writing.

Unit III

• JAM and reading comprehension

Unit IV

• Listening to TED Talks and dialogue writing

Unit V

• Phonetics practice with minimal pairs, stress marking, and reading aloud.

• Read passages following stress and intonation

• Write stories based onpicturesfacilitated.

Suggested Reference Books and Resources

1. Board of Editors. English for Life. Orient BlackSwan.
2. Raymond Murphy. Essential Grammar in Use. Cambridge University Press.
3. T. Balasubramanian. A Textbook of English Phonetics for Indian Students. Macmillan.
4. Greta Thunberg's UN Speech (Open Educational Resource)
5. Mulk Raj Anand. The Lost Child.
6. Sarojini Naidu. The Bird of Time.
7. Nissim Ezekiel. Collected Poems.
8. Rabindranath Tagore. Gitanjali.
9. School of Barbiana. Letter to a Teacher.

ANDHRA UNIVERSITY
B. Vocational course
AGRICULTURE (Honours)
I Year – Semester I
2025-26 Admitted batch
Telugu
(Credits 3+0=3)

యూనిట్ -I ప్రాచీన కవితవం

హితోపదేశం – తికకన - ఆంధ్ర మహాభారతం – శలయపరవం – పాథమాశావసం (41-66 పద్వయలు)

("మందరంబు(బ్రవేశింపక ..." నుంచి "...పందుగోరిన నదయేల పసగు చెపుమ." వరకు)

- తికకన - కవి పరిచయం
- హితోపదేశం – ప్రథాయంశం
- యుద్యం – నాడు, నేడు
- హితోపదేశం - ప్రథాయంశ సందేశం

యూనిట్ -II శతకసాహితయం

ఆణిముత్తయలు - ఏనుగు లక్ష్మణకవి – సుభాషిత రత్తివళి – విద్వతపద్దతి(1,2), ధైరయపధ్యతి(3,4),

శ్రీకాళహస్తీశవరశతకం(5,6), వేమన శతకం(7,8), భాసకరశతకం(9,10)

- 1."భూష్లు గావు మర్తయలకు ..."
- 2. "విద్య నిగూఢ గుపతమగువితతము ..."
- 3. "ఆరంభంపర్ నీచమానవులు ..."
- 4. "ఒకచో నేలను బ్వవళించు ..."
- 5. "ఒకరిం జంపి పద్సుథలై ..."
- 6. "జాతులెప్పుట్, సేవచేయుట్..."
- 7. చెపపబ్డ సావతిచినుకు..."
- 8. "నికకమైన మంచి నీలమొకకటి..."
- 9. "సంతత పుణయశాలి..."
- 10. "పలుమఱు సజజనుండు..."

యూనిట్ -III ఆధునిక పద్యకవితవం

వయతయయము – గుఱ్ఱం జాషువ – కొతతలోకము

- □ కవి పరిచయం
- □ వయతయయము - ప్రఠాయంశం
- □ రచనా నేపథయం
- □ కవిత్తవభవయక్ర

యూనిట్ -IV ఆధునిక వచన కవితవం

- □ 1. 'కెమిస్తటీ ఆఫ్ టియర్సె' – కొపపరిత – కవి పరిచయం
- □ 2. బొగులపయ్యయ - పాగతి, ఎం. - కవయ్యతిా పరిచయం

□ ప్రఠాయంశం

□ ప్రఠాయంశం

యూనిట్ -V ఆధునిక వచన కవితవం

□ 1. 'కెమిస్తటీ ఆఫ్ టియర్సె' – కొపపరిత – కవి పరిచయం

□ 2. బొగులపయ్యయ - పాగతి, ఎం. - కవయ్యతిా పరిచయం

□ ప్రఠాయంశం

□ ప్రఠాయంశం

వాయకరణం

□ సంధులు: అతవ, ఇతవ, ఉతవ, తిాక, యడాగమ, ర్తాగమ, సరళాదేశ, గసడ్డ్వాదేశసవరణ దీరఘ, గుణ, యణదేశ, వృదయ సంధులు.

□ సమాసాలు: తతుపర్ష్, కరమధ్యరయ, ద్వంద్వ, దవగు, బ్లువ్రాహి.

ఆధ్యర గాంథాలు:

1.శ్రామద్వంధ్ాా మహాభారతము – శలయపరవము - తిర్మ్మల తిర్పతి దేవసాథనం పాచురణ

2.సుభాషిత రత్తివళి – ఏనుగు లక్ష్మణకవి

3.వేమన శతకం

4.భాసకరశతకం

5. జాషువ సరవలభ్యరచనల సంగాహ్ం – మనసు ఫండేష్న్ వారి పాచురణ.

6.కొపపరిత కవితవం – శ్రాశ్రా పిాంట్రి, విజయవాడ్.

7. ‘నీలకురింజి సముద్ాం’ కవితల సంపుటి – తూముచరల రాజారాం (సం.) ప్రగతి కవిత్వం, ఛాయా ప్బ్లికేషన్స్, హైదరాబాద్

సూచించబ్డిన సహ్పాఠ్య కారయకామాలు:

1.ననియయ, తికకన, ఎఱ్ఱన మొద్లైన పాస్తద్య కవుల ప్రఠాయంశేతర పద్వయలను ఇచి, విద్వయర్థలచేత సమీక్లు రాయ్యంచడ్ం; ఆయా పద్వయలోలని యతిప్రాసాద ఛందోవిశేషాలను గురితంపజేయడ్ం.

2.తెలుగులోని శతకసాహితయవైశిషాటయని అధ్యయనం చేయ్యంచడ్ం.

3. విద్వయర్థలచేత ప్రఠాయంశాలకు సంబ్ంధంచిన వాయసాలు రాయ్యంచడ్ం (సెమినార్స/అసైన్మ్ంట్).

4. ప్రాచీన ప్రఠాయంశాలలోని సమకాలీనతను గూరిన బ్ృంద్ చరి, ప్రాచీన సాహిత్తయని నేటి సామాజిక ద్ృపిటతో పునర్మమల్యంకనం చేయ్యంచడ్ం.

5. చారితాక, సాంసకృతిక అంశాలకు సంబ్ంధంచిన పరాయట్క పాదేశాలను సంద్రిశంచడ్ం.

6. వయక్రతగత/బ్ృంద్ ప్రాజెకుటలు చేయ్యంచడ్ం.

7. వివిధ ప్తిరకలు సోమవారం ప్రచురంచే సాహితీ పేజీలను ప్రశీలంచడం.

ANDHRA UNIVERSITY
B.Vocational course
AGRICULTURE (Honours)
I Year – Semester I
2025-26 Admitted batch
Sanskrit/Hindi
(Credits 3+0=3)

As per APSCHE
(Note: Not updated in APSCHE)

ANDHRA UNIVERSITY
B. Vocational course
AGRICULTURE (Honours)
I Year – Semester I
2025-26 Admitted batch
Intro to Artificial Intelligence (Skill Enhancement course)

(Credits 4+0=4)

Unit I. AI and its Subfields
Introduction to Artificial Intelligence, History, Definition, Artificial General Intelligence, Industry Applications of AI, Challenges in AI.
Knowledge Engineering, Machine Learning, Computer Vision, Natural Language Processing, Robotics.

Unit 2. Applications of AI
Healthcare, Finance, Retail, Agriculture, Education, Transportation.

Unit 3. Bias and Fairness in AI Systems
Ethics in AI, Bias and Fairness in AI Systems, Transparency in AI Systems, Accountability, Security, Privacy, Inclusivity, Sustainability, Robustness, Reliability.

Unit 4. AI in Research, Generative AI and prompt engineering
AI in Experimentation and Multi-disciplinary research, Generative AI introduction, ChatGPT, Hugging Face, Gemini and other tools basics, Perplexity, Prompt engineering Definition and its importance, Role of Prompt Engineering in AI/ML Interaction, Emerging trends and Future Directions in AI.

Unit 5. Applications of Prompt engineering
Applications of Prompt Engineering: Education, Business & Commerce, Content Creation: AI for Creative Writing,AI for creative design, writing AI scripts for video, generating slides and slidesGPT usage, Designing thumbnails and channel branding with AI

Practical

1. Create a mind map of AI subfields: NLP, CV, ML, Robotics, Knowledge Engineering using Canva/Napkin AI/ Similar Open AI tool

2. Text Analysis with Open-Source NLP Tools: **Tool:**Voyant Tools (text analysis web app)
- Input sample texts (e.g., news articles, speeches).
- Explore word frequency, keywords, sentiment.
- Understand how NLP extracts meaning from text.

3. Train a basic image classifier using webcam images. Observe how the model "learns." Using Google Teachable Machine
- Train two image categories (e.g., “Smiling” vs. “Not Smiling”) using their own webcam images.
- Observe how the model learns to classify.
- Now try feeding images of people with different skin tones, facial features, etc.
- Observe misclassifications or differences in confidence.

4. Simulate an AI chatbot helping a farmer or a student. You may use any GenAI tool of your choice. You may use the prompt below and also try your own.
Prompt:
“Act as an agriculture assistant. A farmer wants to know the best crop based on soil and season. Ask questions and suggest crops.”

5. Test Generative AI- Generate a poem or image from prompt “A futuristic green city.” using ChatGPT, Hugging Face (e.g., image or text generation)
6. Observe how generative AI models may show biased results when prompted with neutral profession descriptions. (Bing Image Creator / DALL·E on ChatGPT/ChatGPT). Generate images using the following neutral prompts:
- “A doctor treating a patient”
- “A teacher in a classroom”
- “A CEO giving a speech”
- “A software engineer working from home”

7. Check how language models may express bias depending on names, ethnicity, or location.
Use ChatGPT or Gemini
Prompts:
Prompt A:
“A person named Raj is applying for a bank loan. Will he be approved?”
Prompt B:
“A person named John is applying for a bank loan. Will he be approved?”
Change names, genders, and nationalities.
Observe the following and report your findings:
- Are the responses different?
- Is one version more positive or negative?
- Does the model express bias or hesitate?
- Should AI make such predictions?
- How do developers prevent this?

8. Exploring Text Generation and Summarization with Google AI Studio
Generate Creative Content
“Write a short story (150 words) about a robot who wants to become a chef.”
- Submit and read the AI-generated story.
- Discuss how detailed and creative the output is.

Summarize a Paragraph
Prompt:
Summarize the following paragraph in 3 sentences:
“Artificial Intelligence is a branch of computer science that aims to create intelligent machines that can mimic human thinking. It includes various subfields like machine learning, natural language processing, and robotics. AI is widely used in industries such as healthcare, finance, and transportation to improve efficiency and decision-making.”
- Submit and review the summary.
- Evaluate how well AI extracts key points.

Refine Your Prompt
Try changing the summary prompt to:
“Summarize the paragraph above in simple language for 10-year-olds.”
- Compare this output to the previous one.
- Note how prompt wording changes results.

9. AI for Creative Writing
Prompt: "Write a short motivational story for 10-year-old students in under 150 words."
10. Generate **Slides:** Tool: Slides GPT/Other Free AI tool
Prompt: "Create a 5-slide presentation on 'AI in Smart Farming'."
11. YouTube Thumbnails / Branding: Tool: Canva + Magic Media AI
Design a thumbnail using Canva's AI tools with a prompt like:
"Design a YouTube thumbnail for a video titled 'Top 5 AI Tools for Students'."

Text Books:

1. AI for Everyone: A Beginner's Handbook for Artificial Intelligence (AI) by Saptarsi Goswami, Amit Kumar Das , Amlan Chakrabarti

2. Prompt Engineering for Beginners: by Kapila Arora, Geetu Garg, Gaurav Arora.

References:

1. Let's Learn Artificial Intelligence: Base Module, Niti Ayog, Atal Innovation Mission.

2. Prompt Engineering for Generative AI: Future-proof inputs for Reliable AI-outputs by James Phoenix & Mike Taylor.

3. Generative AI Tutorial:https://www.w3schools.com/gen_ai/

4. Generative AI 360°: Practical Guide to ChatGPT, Midjourney & AI Tools to Boost Productivity & Creativity , For Professionals, Marketers & Entrepreneurs by Hitesh Motwani , ZebraLearn, 2025.

5. Generative AI: Prompt Engineering Basics:

6. Learn Generative AI Prompt Engineering for everyone. https://www.coursera.org/learn/generative-ai-prompt-engineering-for-everyone?action=enroll

7. Free Artificial Intelligence (AI) Tutorial - Hands-On Prompt Engineering for AI Beginners & Business User | Udemy,

https://www.udemy.com/course/prompt-engineering-for-ai-beginners-business-users

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
I Year Semester - II

1	Principles of Agronomy	Major – core	3+1=4
2	Introduction to soil science	Major – core	3+1=4
3	English	Language	3+0=3
4	MIL (Telugu/Hindi/Sanskrit)	Language	3+0=3
5	Introduction to social work	Multi-disciplinary course	2+0=2
6	Application of Artificial Intelligence (Discipline specific)	Skill Enhancement course (SEC)	4+0=4
7	Indian Knowledge system		0+0=0
		Total	**18+3=21**
Community service project of 80 hours with 1 credit. **Student is eligible for Exit option-1 with the award of Certificate**			

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
I Year Semester – II
PRINCIPLES OF AGRONOMY (Major - core)
(CREDITS 3+1=4)

UNIT – I: Crop Production Basics
• Crops and their classification

• Factors affecting crop production

UNIT – II: Tillage & Crop Establishment
• Tillage: Types and Objectives

• Modern concepts of tillage

• Crop establishment methods

UNIT – III: Manures & Fertilizers
• Manures and fertilizers

• Methods of fertilizer application

UNIT – IV: Irrigation & Cropping Systems
• Irrigation management

• Methods of irrigation

• Cropping patterns and cropping systems

UNIT – V: Weed & Sustainable Farming
• Sustainable agriculture

• Integrated farming systems

Reference Books

- Reddy, S R and Reddi Ramu 5th edition 2016, -kalyani publishers, Ludhiana. Principles of agronomy Authors: T. Yellamanda Reddy and G.H Sankara Reddy

PRACTICALS

1. Visit to college farm & study of farm features and measurements
2. Identification of crops and seeds
3. Study of seeding equipment.
4. Study of Tillage implements- practicing ploughing, puddling operations.
5. Calculation of the seed rate and plant population
6. Different methods of sowing and planting.
7. Different types of intercultural implements used in Field.
8. Methods of Fertilizer application

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
I Year Semester – II
PRINCIPLES OF AGRONOMY (Major - core)
(Credits 3+1=4)
MODEL QUESTION PAPER

Time: 3 Hours **Maximum Marks:70**

SECTION – A

Answer any FOUR questions. Each question carries equal marks. (4*5 = 20)

1. Define Agriculture. Write different branches of Agriculture.
2. Write different methods of planting.
3. Discuss about zero tillage.
4. Differentiate between manures and fertilizers.
5. What do you mean by Cropping system and Cropping pattern.
6. What is a Crop? Write Classification of the crops.
7. Write short note on green manuring.

SECTION – B

Answer All the questions. Each question carries TEN marks (5*10 = 50)

1.a) Write a detailed note on Integrated Farming System (IFS).

(OR)

b) Discuss about Sustainable Agriculture and its importance.

2. a) What do you mean by fertilizers? Write methods of fertilizer application.

(OR)

b) Write classification of Fertilizers.

3. a) What briefly on Sprinkler and Drip Irrigation Methods.

(OR)

b) Define Manures? Write Classification of Manures

4. a) Write a detailed note on modern concepts of tillage.

(OR)

b) Write an essay on Crop stand establishment methods.

5. a) What is Irrigation? List out the methods of irrigation.

(OR)

b) Mention the objectives and importance of Tillage.

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
I Year Semester – II
INTRODUCTION TO SOIL SCIENCE (Major - core)
(CREDITS 3+1=4)

UNIT – I

Soil Components- Soil air, Soil water, Organic and inorganic solids
Properties of Soil Mixture, Pore Space, Bulk Density, Particle Density, Aeration, Drainage, compaction, Surface area, Soil water relations.

UNIT – II

Morphology of Colloids & Biological Properties of Soil - Chemistry of clays, Ionic exchange, Acidity, alkalinity, PH, and salinity relations
Liming and Acidification, Soil Organic matter, C: N relations, N Transformations, Soil organisms, Sulphur transformation.

UNIT – III

Genesis and Classification - Profile, Soil forming factors, Soil distribution, Classification of Systems Drainage, Erosion: Mechanisms and Control.

UNIT – IV

Soil fertility and productivity, plant nutrition – essential nutrients
Functions, deficiency symptoms, correction measures and toxicity symptoms of nutrients in plants. Primary nutrients, secondary nutrients and micro nutrients

UNIT V

Sources, forms, mobility, transformations, fixations and losses of plant nutrients Nutrient interactions
Soil fertility analysis

References

- Indian Society of Soil Science.2012. Fundamentals of Soil Science. IARI, New Delhi.
- Yawalkar K.S, Agarwal, T.P and Bokde, S 1995. Manures and Fertilisers. Agril. Publishing House, Nagpur
- Samuel Tisdale, Nelson Werner L, Beaton James D and Havlin John L. 2005. Soil Fertility and Fertilizers: An Introduction to Nutrient Management, Macmillian Publishing Co., New York.
- D. K .Das 2014. Introductory Soil Science. Kalyani Publishers, New Delh

PRACTICALS

1. Soil sampling procedures for field and horticultural crops
2. Study of Organic Manures and their importance
3 Calculation on Bulk density and Particle density
4. Study of Soil Physical properties.
5. Identification of Fertilizers and their properties and uses
6. Study of soil nutrients and their deficiency symptoms
7. Calculation of Fertilizer recommendations.
8. Soil health card, parameters, EC, PH and their Importance

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
I Year Semester – II
INTRODUCTION TO SOIL SCIENCE (Major - core)
(CREDITS 3+1=4)
MODEL QUESTION PAPER

Time: 3 Hours **Maximum Marks:70**

SECTION – A

Answer any **FOUR** questions. Each question carries equal marks. (4*5 = 20)

1. Discuss about the profile of the Soil.
2. Write a note on soil Air and Soil water.
3. Write a note on classification of soil.
4. Write briefly about soil forming factors
5. What are inorganic solid and explain.
6. Give a brief account on soil organic matter
7. Difference between soil fertility and productivity.

SECTION – B

Answer **All** the questions. Each question carries **TEN** marks (5*10 = 50)

1. a) What do you mean the seep out of top soil? What were types of it.

   (OR)

   b) What is drainage? Write its types.
2. a) Write a detailed note on soil relations.

   (OR)

   b) What is ion? What do you mean by ionic exchanger? Discuss about cat ion exchange capacity.
3. a) Write an essay on soil organic matter? Its importance for flora & Fauna of soil.

   (OR)

   b) Write about the chemistry of soil? Discuss about bulk and practical density.
4. a) Write a note on Porosity of soil.

   (OR)

   b) Discuss about nitrogen transformation in detailed manner.
5. a) What are the functions of primary nutrients and their deficiency symptoms

   (OR)

   b) Write a note on Sulphur transformation.

ANDHRA UNIVERSITY
B. Vocational course
AGRICULTURE - Honours
I Year – Semester II
2025-26 Admitted batch
English
(Credits 3+0=3)

Unit I
• Prose: "On Saying Please" –A.G. Gardiner
• Short Story: "Half a Rupee Worth" –R.K. Narayan
• Conversion of Words.

Unit II
• Poem: "If" –Rudyard Kipling
• Prose: "I Have a Dream" –Martin Luther King Jr.
• Skimming & Scanning

Unit III
• One-Act Play: "Never, Never Nest" –Cedric Mount
• Short Story: "The Gift of the Magi" –O. Henry
• Report Writing

Unit IV
• Short Story: "How I Taught My Grandmother to Read" –Sudha Murty
• Information Transfer: Pie Charts , tree diagram and flow chart.
• Note-making

Unit V
• Prose: "The Secret of Work" –Swami Vivekananda
• Notices, Agendas, and Minutes
• One-Word Substitutes

Unit-wise Suggested Activities:
Unit I
• Vocabulary games
• Role-play

Unit II
• Presentation on a dream job.
• Group Discussion

Unit III
• Debate on EMI
• Report Writing college events

Unit IV
• Presentation using ppt (charts/photos)
• Preparing notes from a short lecture/podcast

Unit V

- Drafting a Notice and Agenda for a student meeting
- Vocabulary Quiz

Reference Books:

- Fluency in English –Part II, Board of Editors, Orient BlackSwan
- Effective Technical Communication by M. Ashraf Rizvi (McGraw Hill)
- English Grammar in Use by Raymond Murphy (Cambridge)
- Professional Communication by Aruna Koneru (McGraw Hill)
- Selected Stories by R.K. Narayan (Indian Thought Publications)
- Collected Essays of A.G. Gardiner
- Collected Poems by Rudyard Kipling
- The Gift of the Magi and Other Stories by O. Henry
- Selected Speeches of Swami Vivekananda
- Short Stories by Sudha Murty (Penguin India)

ANDHRA UNIVERSITY
B. Vocational course
AGRICULTURE (Honours)
I Year – Semester II
2025-26 Admitted batch
Telugu
(Credits 3+0=3)

As per APSCHE

ANDHRA UNIVERSITY
B. Vocational course
AGRICULTURE (Honours)
I Year – Semester II
2025-26 Admitted batch
Sanskrit/Hindi
(Credits 3+0=3)

As per APSCHE

ANDHRA UNIVERSITY
B. Vocational course
AGRICULTURE (Honours)
I Year – Semester II
2025-26 Admitted batch
Introduction to Social Work (Multi-disciplinary course**)**
(Credits 2+0=2)

Unit-I

Introduction to social work and concepts related to social work

Introduction to Social Work- Definition- Scope- objectives - Functions- social service, social welfare services, social reform, major social problems in India; Social work philosophy, values, objectives, principles, methods and fields of social work.

Unit-II

Methods of Working with Individuals and Groups

Social case work –Definition-scope and importance of social case work, principles and process of social case work -Tools and techniques in social case work- Counselling skills.

Social Group Work-Definition-scope- the need for social group work –Group work process - Principles of Group Work -Stages of Group Work-Facilitation skills and techniques.

Unit-III

Working with Communities and Field Work in social work

Community – definition - characteristics- types- community organisation as a method of social work-definition-objectives-principles- phases of community organization - concepts of community development, community participation and community empowerment.

Field work in social work – Nature, objectives and types of field work - Importance of field work supervision.

References:

1. Chowdhary, Paul. D. (1992). Introduction to Social Work. New Delhi: Atma Ram and Sons.

2. Friedlander W.A. (1955). Introduction to social welfare, New York, Prentice Hall.

3. Government of India, (1987). Encyclopaedia of Social Work in India (Set of 4 Volumes). New Delhi, Publications Division, Ministry of Information and Broadcasting.

4. Lal Das, D.K. (2017). Practice of Social Research – Social Work Perspective, Jaipur,

5. Rawat Publications.

6. Madan, G.R. (2009). Indian Social Problems (Volume 1 & 2). New Delhi: Allied publishers Private Limited.

7. Siddiqui, H.Y.(2007). Social Group Work. Jaipur: Rawat Publications

8. Pasty McCarthy &Carolin Hatcher, (2002). Presentation skills. The Essential Guide for Students. New Delhi, Sage Publications.

9.Websites on Social work methods

ANDHRA UNIVERSITY
B.Vocational course
AGRICULTURE (Honours)
I Year – Semester II
2025-26 Admitted batch
Application of Artificial Intelligence (Skill Enhancement course**)**
(Credits 4+0=4)

As per APSCHE

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
II Year Semester – III

1	Agronomy of Field crops	Major – core	3+1=4
2	Introduction to Entomology	Major – core	3+1=4
3	Introduction to Plant Pathology	Major – core	3+1=4
4	Fundamentals of Genetics	Minor	3+1=4
5	AECC (Creative writing/ Business writing in English)	Language	3+0=3
6	AECC (Creative writing/ Journalistic Writing in MIL- Telugu/ Hindi/Sanskrit)	Language	3+0=3
7	Introduction to public administration	Multi-disciplinary course	2+0=2
8	Plant Nursery	Skill enhancement course (SEC)	2+0=2
		Total	**22+4=26**

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
II Year Semester – III
AGRONOMY OF FIELD CROPS (Major – core)
(CREDITS 3+1=4)

UNIT – I : Cereals

Rice – Wheat – Maize

UNIT – II : Millets

Sorghum – Pearl millet – Finger millet – Proso millet – Kodo millet – Foxtail millet – Little millet – Barnyard millet

UNIT – III : Pulses

Pigeon pea – Green gram – Black gram – Bengal gram – Peas – Horse gram – Cowpea

UNIT – IV : Oilseeds

Groundnut – Sesame – Sunflower – Castor – Rapeseed & Mustard – Safflower – Niger

UNIT – V : Commercial & Fiber Crops

Sugarcane – Tobacco – Cotton – Jute – Mesta – Sun hemp

Reference Books

- Reddy, S.R. and Ramu Reddi. Agronomy of Field Crops, 5th Edition, 2016, Kalyani Publishers, Ludhiana.
- Chidda Singh, Singh P. and Singh R. Modern Techniques of Raising Field Crops, Oxford Publishing House, New Delhi.
- Rajendra Prasad. Textbook of Field Crop Production, Vol. I & II, 2004.
- Panda, S.C. Agronomy of Fodder and Forage Crops, 2014, Kalyani Publishers, Ludhiana.

AGRONOMY OF FIELD CROPS (PRACTICAL)

1. Identification of cereals, millets, pulses, oil seed, sugar and fibre crops in the crop cafeteria.
2. Practicing various nursery types and main field preparation for field crops.
3. Acquiring skill in different seed treatment techniques in important field crops.
4. Estimation of plant population, seed rate and fertilizer requirement for important field crops.
5. Acquiring skill in field preparation, sowing and manuring of crops under pure and intercropping situations for field crops.
6. Acquiring skill in using seed drill for sowing operations.
7. Observations on growth parameters of cereals, millets, pulses, green manures and forage crops.
8. Study on yield parameters and estimation of yield in field crops.
9. Collection of seeds of field crops.

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
II Year Semester – III
AGRONOMY OF FIELD CROPS (Major – core)
(CREDITS 3+1=4)
MODEL QUESTION PAPER

Time: 3 Hours **Maximum Marks:70**

SECTION – A

Answer any **FOUR** questions. Each question carries equal marks. (4*5 = 20)

1. Differentiate between Corchorus capsularis & Corchorus olitorius.
2. Explain about Sorghum effect.
3. Write about Retting process of Jute.
4. Write down the Nutritional values of Bajra & finger millet
5. Write about the Classification of Maize
6. Write briefly about different types of nurseries practiced in Rice.
7. Write down common names, scientific names and their origins of all major & minor millets.

SECTION – B

Answer **All** the questions. Each question carries **TEN** marks (5*10 = 50)

1. a) Write down the importance of pulses in India.
   (OR)
   b) Write down the importance of oilseeds in India.
2. a) Write about SRI Method of rice cultivation.
   (OR)
   b) Write about all planting methods of sugarcane.
3. a) Write package of practices of Finger millet.
   (OR)
   b) Write about package of practices of maize.
4. a) Write about nutrient management of Sugarcane, Red gram & Maize.
   (OR)
   b) Write about nutrient management of Groundnut, Cotton & Sunflower.
5. a) write about water and nutrient management in wheat
   (OR)
   b) Write seed rate, souring, nutrient Management, Water Management, Weed Management, harvesting & yield of Rice.

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
II Year Semester – III
INTRODUCTION TO ENTOMOLOGY (Major – core)
(CREDITS 3+1=4)

UNIT I

- History of Entomology in India
- Antenna, mouthparts, legs, wings and sense organs

UNIT II

- Anatomy and physiology - digestive, excretory, respiratory, circulatory systems

UNIT III

- Nervous and reproductive systems in insects in brief
- Insect systematics; Distinguishing characters of agriculturally important orders and families of Hexapoda. Characters of Apterygota

UNIT IV

- Exopterygota (Orthoptera, Phasmida, Dictyoptera, Hemiptera, Isoptera, Psocoptera, Thysanoptera)

UNIT V

- Taxonomy of Endopterygota - Distinguishing characters of agriculturally important families of order Lepidoptera, Coleoptera, Diptera, Hymenoptera

INTRODUCTION TO ENTOMOLOGY (PRACTICAL)

1. Observations on external features of grasshopper / cockroach,
2. Methods of insect collection, preservation – Preparation of Riker mount.
3. Types of insect head, antenna, mouth parts – Structure of thorax.
4. Types of insect legs, wings and their modifications – wing coupling.
5. Structure of abdomen, and its modifications.
6. Metamorphosis in insects – immature stages in insects.
7. Study of digestive and reproductive systems of grasshopper / cockroach
8. Observing the characters of agriculturally important orders and families.

REFERENCES

- Vasanthraj David. B and Rama murthy VV 2016 Elements of Economic Entomology, popular book depot, Coimbatore
- Vasanthraj David. B and Ananthakrishnan T.N.2016. General and applied Entomology, Tata McGraw-Hill publishing house, New Delhi.
- Nair MRGK 1986, Insects and Mites of Crops in India, ICAR, New Delhi.
- Khare, S.P 1993 Stored Grain Pests and their Management, kalyani publishers, Ludhina

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
II Year Semester – III
INTRODUCTION TO ENTOMOLOGY (Major – core)
CREDITS 3+1=4)
MODEL QUESTION PAPER

Time:3 hrs **Maximum Marks:70**

SECTION – A

Answer any FOUR questions. Each question carries equal marks. (4*5 = 20)

1. Write about insect antenna and enlist different types of antennae with suitable examples.
2. What is moulting and write about stages and hormones involved in process of moulting.
3. Write about process of digestion in insects.
4. Explain the respiratory system of an insect
5. Write about different parts of insect leg and give a detailed account on different types of insect legs with suitable examples.
6. Write in detail about insect circulatory system.
7. Write about piercing and sucking type of mouthparts.

SECTION – B

Answer ALL the questions. Each question carries Ten marks (5*10=50)

1. a) Write about digestive system of insects.

   (OR)

   b) Differentiate between Apterygota and Pterygota? Explain any two orders of Apterygota and Pterygota respectively
2. a) Elaborate the characteristics of order lepidoptera.

   (OR)

   b) Write about insect wings, wing venation, different types of wings and wing flexing/ coupling mechanisms.
3. a) Write about types of reproduction in insects and explain male reproductive system.

   (OR)

   b) Write about the female reproductive system of an insect
4. a) Write about excretory system of an insect

   (OR)

   b) Write about the order hymenoptera
5. a) Write about the nervous system of an insect

   (OR)

   b) Elaborate the characteristics of order coleoptera.

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
II Year Semester – III
INTRODUCTION TO PLANT PATHOLOGY (Major – core)
(CREDITS 3+1=4)

UNIT I

- Fungi: General characters, definition of fungus, somatic structures, Types of fungal thalli, fungal tissues, modifications of thallus, Reproduction (asexual and sexual)

UNIT II:

- Bacteria – General Characters, Classification of plant pathogenic bacteria Important plant bacterial diseases and their causal agents. Mollicutes: Phyto plasma and Spiroplasma – General characters and important diseases and vectors

UNIT III:

- Fastidious vascular Bacteria – general characters and important diseases and vectors Viruses: General characters of plant viruses, nature, architecture
- Symptoms of various viral diseases, transmission of plant viruses. Important plant viral diseases and their vectors.

UNIT IV:

- Viroid's, phanerogamic plant parasites and plant parasitic nematodes, viroid's – General characters and important diseases
- Phanerogamic plant parasites – general characters, propagation, survival and their hosts Plant parasitic nematodes–general characters and important plant parasitic nematodes.

UNIT V:

- Survival of Plant Pathogen- Dispersal of Pathogen- Active and Passive- Infection process – pre-penetration, penetration and post-penetration. Defense mechanism in plants – structural, induced defense in plants. Host plant resistance.

INTRODUCTION TO PLANT PATHOLOGY (PRACTICAL)

1. Study of lab equipment.
2. Preparation of PDA (Potato Dextrose Agar).
3. Preparation of NA (Nutrient Agar).
4. General study of different structures of fungi.
5. Study of symptoms of various plant diseases.
6. Staining and identification of plant pathogenic bacteria.
7. Study of phanerogamic parasites.
8. 30 Herbarium.

REFERENCES

- Introductory Mycology- 1996 C. J. Alexopoulos C. W. Mims and M. Blackwell, John Wileyand Sons Ltd. N. York.
- Introduction to Mycology –1990 R. S. Mehrotra and K. R. Aneja, Wiley E. Ltd. New Delhi
- Plant Pathogens- The Fungi – 1982 R. S. Singh, Oxford and IBH Publishing Co., New Delhi.
- Introduction to Plant Viruses – 1987 C. L. Mandahar, Chand and Co., Pvt Ltd., New Delhi.
- Fungicides in Plant disease control – Nene Y L and Thapliyal P N 1993 Oxford & IBM Publishing Co., New Delhi.
- Introduction to Principles of Plant Pathology – Singh R. S. 1984. Oxford & IBH Publishing Co., New Delhi.
- Principles of Plant Pathology – Das Gupta M. K. 1999. Allied Publishers, Pvt. Ltd. New Delhi.
- Plant Pathology. Concepts and Laboratory Exercise. Trigiano, R.N., Windham, M.T. and Windham.
- A.S. (eds), 2004. CRC Press, New York.

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
II Year Semester – III
INTRODUNCTION TO PLANT PATHOLOGY (Major – core)
(CREDITS 3+1=4)
MODEL QUESTION PAPER

Time:3 hrs **Maximum Marks:70**

SECTION – A

Answer any **FOUR** questions. Each question carries equal marks. (4*5 = 20)

1. What are the general characteristics of fungi and modifications of its thallus?
2. Explain about symptoms of bacterial diseases and their causal organisms.
3. Give an account on Phanerogamic plant parasites
4. What is vector? write about importance and different types of vectors in disease transmission
5. Explain about general characteristics of phytoplasmas and spiroplasmas
6. Write about general characters of plant parasitic nematodes.
7. Write breifly about Passive dispersal of Plant Pathogen by Insects.

SECTION – B

Answer **ALL** the questions. Each question carries **Ten** marks **(5*10=50)**

1. a. Write in detail about reproduction (both sexual and asexual) in fungi

(OR)

b. Write about the source of survival of pathogens.

2. a. Give a detailed account of classification of fungi.

(OR)

b. Write about different fungal thalli and its somatic structures

3. a. Write about characters of viroids and important diseases caused by them

(OR)

b. Give an account on characters of virus, symptoms of diseases and vectors of transmission

4. a. Write an essay on diseases caused by plant parasitic nematodes

(OR)

b. Write about classification of bacteria

5. a. Explain about different symptoms and diseases caused by phytoplasmas and spiroplasmas along with their vectors of transmission

(OR)

b. Write about different fastidious vascular bacteria and diseases caused by them

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
II Year Semester – III
FUNDAMENTALS OF GENETICS (Minor)

(Credits 3+1=4)

UNIT I

- Gene expression and differential gene activation – Operon concept – Lac Operon
- Meiosis – definition – process – differences between mitosis and meiosis – significance in plant breeding
- linkage – definition – linkage groups – characteristic features of linkage – pleiotropy – linkage groups
- Crossing over – mechanism of crossing over – types of crossing over – factors effecting crossing over – cytological proof of crossing over in Drosophila – significance of crossing over in plant breeding – coincidence – interference

UNIT – II

- Mendel's Laws – Law of segregation – Law of independent assortment – Principle of dominance – Principle of unit characters – exceptions to Mendel's Laws
- Monohybrid and dihybrid ratios – modifications of F2 ratio in monohybrid and dihybrid crosses and lethal factors

UNIT - III

- Gene action – types of gene action – pleiotropism – alleles – characteristic features of alleles
- multiple alleles (blood groups in human beings) – characteristic features of multiple alleles –
- Penetrance (complete penetrance and incomplete penetrance) and expressivity (uniform expressivity and variable expressivity) – sex determination

UNIT – IV

- Gene mutations – introduction – definition – terminology – classification of mutations – characteristic features of mutations – spontaneous mutations and induced mutations
- Gene mutations – artificial induction of mutations – physical and chemical mutagens
- Chromosomal aberrations – structure – types of structural chromosomal aberrations – deletions (deficiencies) and duplications

UNIT - V

- Numerical chromosomal aberrations – terminology – classification – euploidy and aneuploidy – kinds of polyploids – autopolyploid, allopolyploids and segmental allopolyploids
- Numerical chromosomal aberrations – euploidy – monoploids – haploids – differences between monoploids and haploids – diploidy – polyploidy – origin of polyploidy – induction of polyploidy – triploids – tetraploids
- Numerical chromosomal aberrations – polyploidy
- Numerical chromosomal aberrations – aneuploidy – types of aneuploids – monosomics, double monosomics, nullisomics, double nullisomics, trisomics (primary, secondary and tertiary trisomics) and tetrasomics

References

- Gupta, P.K. 1985. Cytology, Genetics and Cytogenetics. Rastogi Publications, Meerut. Gupta, P.K. 2007. Genetics. Rastogi Publications, Meerut.
- Pundhan Singh, 2000. Elements of Genetics. Kalyani Publishers, Ludhiana.
- Singh, B.D. 2007. Fundamentals of Genetics. Kalyani Publishers, Ludhiana.
- Strickberger, M.W. 2004. Genetics. Prentice – Hall of India Pvt. Ltd., New Delhi.
- Verma, P.S. and Agarwal, V.K. 2005. Cell Biology, Genetics, Molecular Biology, Evolution and Ecology. S. Chand and Co., New Delhi

FUNDAMENTALS OF GENETICS (PRACTICAL)

1. Study of Microscope.
2. Study of cell structure.
3. Study different types of cell divisions
4. Practice on mitotic cell division.
5. Practice on meiotic cell division.
6. Probability and Chi-square test.
7. Monohybrid and its modifications.
8. Dihybrid.

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
II Year Semester – III
FUNDAMENTALS OF GENETICS (Minor)
(Credits 3+1=4)
MODEL QUESTION PAPER

Time: 3 Hours **Maximum Marks:70**

SECTION – A

Answer any **FOUR** questions. Each question carries equal marks. **(4*5 = 20)**

1. What are the characteristics of Mutations.
2. Explain lac operon concept of general regulation with neat labelled diagram.
3. Differentiate between linkage & crossing over.
4. Explain Mendel's law of heredity with suitable examples.
5. Explain the experiment to show cytological proof of crossing over.
6. Explain the different types of structural chromosomal aberration with suitable illustrations.
7. What is meant by gene action. Explain the types of gene action.

SECTION – B

Answer **All** the questions. Each question carries **TEN** marks **(5*10 = 50)**

1. a) Explain the stages in meiosis with diagrams.

(OR)

b) What is polyploidy? Give the significance of polyploidy in plant breeding.

2. a) Differentiate between mitosis & meiosis.

(OR)

b) Explain lethal gene action with the help of suitable example.

3. a) Define gene interaction? Explain any two of the gene interactions with help of suitable examples.

(OR)

b) Explain different models of sex determination in plants.

4. a) Explain about the special types of chromosomes.

(OR)

b) Explain the principle of dominance and the exceptions to Mendel's laws.

5. a) Explain the Phenomenon of multiple alleles with the help of an appropriate example.

(OR)

b) Write about classification, Characteristics of linkage

ANDHRA UNIVERSITY
B. Vocational course
AGRICULTURE- Honours
II Year – Semester III
2025-26 Admitted batch
AECC - Creative writing/ Business writing in English
(Credits 3+0=3)

As Per APSCHE

ANDHRA UNIVERSITY
B.Vocational course
AGRICULTURE- Honours
II Year – Semester III
2025-26 Admitted batch
AECC - Creative writing/ Journalistic Writing in MIL- Telugu/Hindi/ Sanskrit
(Credits 3+0=3)

As per APSCHE

ANDHRA UNIVERSITY
B. Vocational course
AGRICULTURE (Honours)
II Year – Semester III
2025-26 Admitted batch
INTRODUCTION TO PUBLIC ADMINISTRATION (Multi-disciplinary course)
(Credits 2+0=2)

Unit: I

1. Introduction to Public Administration - Woodrow Wilson - Definition and nature and scope of public administration - Significance - Distinction between public and private administration

Unit: II

2. All India Services - Central Services - State Services - Importance of All India Services UPSC & SPSCs Powers and Functions - NITI Aayog

Unit: III

3. Accountability of Administration in India - Legislative - Executive – Judiciary - Judicial Activism - E-Governance in India - Good Governance initiatives – Functions and roles of Administrators

References:

1. Public Administration by Awasthi & Maheswari
2. Indian Administration by Maheswari
3. Administrative Theories by Mohit Bhattacharya
4. Comparative Administration by Mohit Bhattacharya
5. Indian Government & Politics by B. L. Fadia

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
II Year Semester – III
PLANT NURSERY (Skill enhancement course**)**
(CREDITS 2+0=2)

Unit-1: Introduction to plant nursery

1. Plant nursery: Definition, importance.
2. Different types of nurseries –on the basis of duration, plants produced, structure used.
3. Basic facilities for a nursery; layout and components of a good nursery.
4. Plant propagation structuresin brief.
5. Bureau of Indian Standards (BIS-2008) related to nursery.

Unit- 2: Necessities for nursery.

1. Nursery beds – types and precautions to be taken during preparation.
2. Growing media, nursery tools and implements, and containers for plant nursery, in brief.
3. Seeds and other vegetative material used to raise nursery.in brief.
4. Outlines of vegetative propagation techniques to produce planting material.
5. Sowing methods of seeds and planting material.

Unit-3: Management of nursery.

1. Seasonal activities androutine operations in a nursery.
2. Nursery management – watering, weeding and nutrients; pests and diseases.
3. Common possible errors in nursery activities.
4. Economics of nursery development, pricing and record maintenance.
5. Online nursery information and sales systems.

Suggested Co-curricular activities

1. Assignments/Group discussion/Quiz/Model Exam.
2. Demonstration of nursery bed making.
3. Demonstration ofpreparation of media for nursery.
4. Hands on training on vegetative propagation techniques.
5. Hands on training on sowing methods of seeds and other material.
6. Invited lecture cum demonstration by local expert.
7. Watching videos on routine practices in plant nurseries.
8. Visit to an agriculture/horticulture /forest nursery.
9. Case study on establishment and success of a plant nursery.

Suggested text books/reference books:

1. Ratha Krishnan, M., et.al. (2014) Plant nursery management: Principles and practices, Central Arid Zone Research Institute (ICAR), Jodhpur, Rjasthan
2. Kumar, N., (1997) Introduction to Horticulture, Rajalakshmi Publications, Nagercoil.
3. KumarMishra, K., N.K. Mishra and Satish Chand (1994) Plant Propagation, John Wiley & Sons, New Jerse

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
II Year Semester – III
PLANT NURSERY (Skill enhancement course)
(Credits 2+0=2)
MODEL QUESTION PAPER

Time: 1½ hrs **Max. Marks: 50**

SECTION- A

Answer any **FOUR** questions 4x5M=20

1. Define nursery. Give its importance.
2. Give the basic facilities of a nursery.
3. Write briefly about the plant propagation structures
4. Give an account of the types of nursery beds
5. Describe the tools of a nursery
6. Write about the seeds used in raising nursery
7. Give the outlines of vegetative propagation techniques
8. Explain the routine operations in a nursery

SECTION- B

Answer any **THREE** questions. 3x10M = 30

1. Give a detailed account of the different types of nurseries

2. Give an account of the layout and the components of a good nursery

3. Write an account of the bureau of Indian standards (BIS-2008) related to a nursery

4. Describe the vegetative materials to raise nursery

5. Give a detailed account of the nursery management

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
II Year Semester – IV

1	Pests of Field crops and their management	Major – core	3+1=4
2	Diseases of Field and Horticultural crops and their management	Major – core	3+1=4
3	Principles of Plant Breeding	Major – core	3+1=4
4	Horticulture	Minor	3+1=4
5	Fundamentals of economics	Multi-disciplinary course	2+0=2
6	Agriculture marketing	Skill enhancement course (SEC)	2+0=2
		Total	**16+4=20**

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
II Year Semester – IV
PESTS OF FIELD CROPS AND THEIR MANAGEMENT (Major – core)
(CREDITS 3+1=4)

UNIT I

- Pests of Cereals and Millets Distribution, bionomics, symptoms of damage and management strategies for insect pests-Rice stem borer, Gall midge, Brown Plant Hopper, Green leaf hopper, Rice Hispa, Leaf Folder, Ear Head Bug and integrated pest management of rice,
  Wheat -Gujia weevil,
  Maize-Fall armyworm, Ragi Pink Borer, Corn earworm
  Sorghum- Shoot fly, Sorghum Midge, Stem Borer, Ear Head Bug

UNIT II

- Pests of Pulses and Oilseeds Distribution, bionomics, symptoms of damage and management strategies of insect pests and integrated pest management of pulses (grams, cowpea.)-Gram Caterpillar, Pod fly, red gram plume moth, red gram Mite spotted podded borer, Cowpea aphid
- Groundnut-Red Hairy Caterpillar, White Grub, Tabacco caterpillar, groundnut aphid, pod bug, Leaf Miner
- Castor-Castor Semi looper, Shoot and capsule borer, Tabacco caterpillar
- Sunflower-Head Borer, Bihar Hairy Caterpillar, Tabacco caterpillar
- Mustard-Diamond Back Moth, Aphid, Mustard sawfly

UNIT III

- Pests of Cotton and Sugarcane Distribution, bionomics, symptoms of damage and management strategies of insect pests and integrated pest management
- cotton- Pink bollworm, Spotted Bollworm, American Bollworm, sucking pests
- Sugarcane-Early shoot borer, top shoot borer, Internodal borer, and sucking pest

UNIT IV

- Pests of Stored Products bionomics, symptoms of damage and management strategies Rice weevil, pulse beetle, khapra beetle, groundnut bruchid, Flour beetle, Saw toothed beetle, Cigarette beetle, Angoumois grain moth, Rice moth

UNIT V

- Rodents and birds of agricultural importance and their management. Locusts and their management**.**

PESTS OF FIELD CROPS AND THEIR MANAGEMENT (PRACTICAL)

1. Pests of rice
2. Pests of maize, sorghum
3. Pests of wheat and ragi
4. Pests of grams and cowpea
5. Pests of groundnut, gingelly and sunflower
6. Pests of castor, soybean, safflower and mustard
7. Pests of cotton
8. Pests of sugarcane
9. Pests of stored products
10. Gadgets for management of stored product insects.

Reference Books

- Vasanthraj David. B and Rama murthy VV 2016 Elements of Economic Entomology, popular book depot, Coimbatore
- Vasanthraj David. B and Ananthakrishnan T.N.2016. General and applied Entomology, Tata McGraw-Hill publishing house, New Delhi.
- Nair MRGK 1986, Insects and Mites of Crops in India, ICAR, New Delhi.
- Khare, S.P 1993 Stored Grain Pests and their Management, kalyani publishers, Ludhina.

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
II Year Semester – IV
PESTS OF FIELD CROPS AND THEIR MANAGEMENT (Major – core)
(Credits 3+1=4)
MODEL QUESTION PAPER

Time: 3 Hours **Maximum Marks:70**

SECTION – A

Answer any **FOUR** questions. Each question carries equal marks. (4*5 = 20)

1. Write down symptoms and management for Brown Plant Hopper and Green Leaf Hopper of paddy.
2. Write down symptoms and management for Stem borer and Corn worm or ear worm of maize.
3. Write down symptoms and management for Red hairy caterpillar and leaf hopper.
4. Write down symptoms and management for yellow stem borer in paddy.
5. Write down symptoms and management for Root grub and Leaf miner of groundnut.
6. Write down symptoms and management for Pink bollworm and American boll worm of cotton.
7. Write down symptoms and management for Sugarcane scales and sugarcane hopper

SECTION – B

Answer **All** the questions. Each question carries **TEN** mark (5*10 = 50)

1. a) Write down IPM practices of Paddy.

(OR)

b) Write down symptoms and management for Mustard saw fly, Groundnut aphid and sorghum gall fly.

2. a) Write down IPM practices of Pulses.

(OR)

b) Write down symptoms and management for termites, castor shoot borer, and castor jassids.

3. a) Write down IPM practices of Cotton.

(OR)

b) Write down symptoms and management for spotted boll worm, Red cotton bug, and cotton thrips.

4. a) Write down IPM practices of Stored grain pest.

(OR)

b) Write down symptoms and management for Ragi pink borer, sorghum ear head bug, and sorghum midge.

5. a) Write down the management practices for Rodents

(OR)

b) List out the pests of birds and locusts with their scientific names and their management.

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
II Year Semester – IV
DISEASES OF FIELD AND HORTICULTURAL CROPS AND THEIR MANAGEMENT
(MAJOR – CORE)
(CREDITS 3+1=4)

UNIT I

- Principles of plant disease management. Physical methods and biological methods. Protection – Classification of fungicides based on chemical nature and method of application. Integrated disease management.

UNIT II

Diseases of Cereals, Millets and their Management-

- Rice-Blast, Brown spot, Sheath blight, Bacterial Leaf Blight (BLB), Bacterial leaf streak (BLS)
- Maize-Leaf blight, Banded leaf &sheath blight, Charcoal rot,
- Sorghum-Rust, Smut, Downy mildew, Ergot
- Bajra -Green ear, Ergot
- Ragi-Blast

UNIT III

Diseases of Pulses and oil seeds and their Management

- Red Gram-Wilt, Phytophthora seedling Blight, Sterility Mosaic virus
- Black Gram and Green Gram -Powdery Mildew, Rust, Cercospora Leaf Spot, Yellow Mosaic virus
- Ground nut-Tikka Leaf Spot, Rust, Bud necrosis
- Sun Flower-Leaf Blight, Downy mildew, Head rot
- Sesamum-Phyllody, Alternaria Leaf spot, Powdery Mildew

UNIT IV

Diseases of Cash crops and vegetable crops and their Management

- Cotton-Bacterial Blight, Fusarium Wilt, Verticillium Wilt, Anthracnose
- Sugar cane- Red rot, Whip Smut, Grassy shoot, Ratoon Stunting
- Brinjal- Little leaf of Brinjal, Phomopsis Blight
- Chilli-Damping Off, Die back or Fruit Rot, Powdery Mildew
- Tomato -Tomato Spotted wilt (TSWV), Root knot nematode
- Bhendi- Yellow vein mosaic, Powdery mildew.

UNIT V

Diseases of Fruits and their Management-

- Mango- Malformation, Powdery mildew, Anthracnose.
- Papaya- Foot rot, Mosaic, Leaf curl.
- Banana- Sigatoka leaf spot, Bunchy top, Panama wilt, Moko disease
- Citrus-Gummosis, Citrus Canker, Tristeza

PRACTICAL

1. Survey and assessment of important plant diseases
2. Methods of application of fungicides
3. Special methods of application – acid delinting, pseudostem injection, root feeding, pairing and pralinage, trunk injection
4. Mass multiplication of Trichoderma spp and method of application
5. Identification of Rice and Millets Diseases
6. Identification of Diseases on Pulses
7. Identification of Diseases on Oil Seeds
8. Identification of Diseases on Commercial Crops
9. Identification of Diseases on Vegetables
10. Identification of Diseases on Fruits

REFRENCES:

- Introductory Mycology- 1996 C. J. Alexopoulos C. W. Mims and M. Blackwell, John Wileyand Sons Ltd. N. York.
- Introduction to Mycology –1990 R. S. Mehrotra and K. R. Aneja, Wiley E. Ltd. New Delhi
- Plant Pathogens- The Fungi – 1982 R. S. Singh, Oxford and IBH Publishing Co., New Delhi.
- Introduction to Plant Viruses – 1987 C. L. Mandahar, Chand and Co., Pvt Ltd., New Delhi.
- Fungicides in Plant disease control – Nene Y L and Thapliyal P N 1993 Oxford & IBM Publishing Co., New Delhi.
- Introduction to Principles of Plant Pathology – Singh R. S. 1984. Oxford & IBH Publishing Co., New Delhi.
- Principles of Plant Pathology – Das Gupta M. K. 1999. Allied Publishers, Pvt. Ltd. New Delhi. 8. Plant Pathology. Concepts and Laboratory Exercise. Trigiano, R.N., Windham, M.T. and Windham.
- A.S. (eds), 2004. CRC Press, New York.

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
II Year Semester – IV
DISEASES OF FIELD AND HORTICULTURAL CROPS AND THEIR MANAGEMENT
(MAJOR – CORE)
(Credits 3+1=4)
MODEL QUESTION PAPER

SECTION - A

Time: 3hrs **Maximum Marks:70**

Answer any **FOUR** questions. Each question carries equal marks**.** **(4*5=20)**

1. Any two diseases of green gram and their casual organisms.
2. What are Phytoalexins, write about their characters with examples.
3. Write about Antibiosis and its types.
4. Write about Integrated disease management
5. Write the Symptoms of Ergot and Downy Mildew of Sorghum.
6. Differentiate Early and late Tikka diseases in Ground nut and give their management.
7. Write about the symptoms, Disease cycle, favorable conditions and management of YMV in Black and Green gram.

SECTION - B

Answer **ALL** the questions. Each question carries **TEN** marks**.** **(5*10=50**)

1. a) Explain different biological methods for plant protection.

   (OR)

   b) Give a brief account of any two diseases of sorghum with pathogens, symptoms and control
2. a) Write about the Eradication methods in Plant disease management.

   (OR)

   b) Write about classification of fungicides based on chemical nature.
3. a) List out the diseases of Rice with causal organism and write about the symptoms, spread and management of Rice Blast.

   (OR)

   b)List out the diseases of Red gram and write about the symptoms and management of wilt and sterility mosaic diseases.
4. a) List out the diseases of Sugarcane with causal organism and write about the symptoms, spread and management of Red Rot.

   (OR)

   b) List out the major diseases of Citrus with causal organism and write about the symptoms, spread and management of Gummosis
5. a) Write about the symptoms and Management of Chilli Die back and Little leaf of brinjal.

   (OR)

   b) Write about the symptoms and management of Mango Anthracnose and Malformation diseases.

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
II Year Semester – IV
PRINCIPLES OF PLANT BREEDING (Major – core)
(CREDITS 3+1=4)

UNIT-I

- Self – incompatibility and male sterility- genetic consequences, cultivar options; Domestication, Acclimatization, introduction, Centre of origin/diversity.

UNIT-II

- Genetic basis and breeding methods in self-pollinated crops-mass and pure line selection, hybridization techniques and handling of segregating population.

UNIT-III

- Multiline concept; Concepts of population genetics and Hardy Weinberg Law.
- Genetic basis and methods of breeding cross pollinated crops, modes of selection.

UNIT-IV

- Heterosis and inbreeding depression, development of inbred lines and hybrids, composite and synthetic varieties
- Breeding methods in asexually propagated crops, clonal selection and hybridization.

UNIT-V

- Wide hybridization and pre-breeding; Polyploidy in relation to plant breeding; mutation breeding- methods and uses.

PRACTICAL

1. Plant Breeder's kit; Study of germplasm of various crops;
2. Study of floral structure of self-pollinated and cross-pollinated crops;
3. Emasculation and hybridization techniques in self- & cross-pollinated crops;
4. Consequences of inbreeding on genetic structure of resulting populations;
5. Study of male sterility system
6. Methods of calculating mean, range, variance, standard deviation.
7. Designs used in plant breeding experiment, analysis of Randomized Block Design;
8. Estimation of heterosis, inbreeding depression and heritability;

REFERENCES

- Principles of Plant Breeding (1st & 2nd Edition) by RW Allard,
- Breeding Field Crops by JM Poehlman,
- Plant Breeding: Principles & Practices by JR Sharma,
- Genetics by Strick berger, and
- An introduction to genetic analysis by Suzuki et Al.

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
II Year Semester – IV
PRINCIPLES OF PLANT BREEDING (Major – core)
(Credits 3+1=4)
MODEL QUESTION PAPER

Time:3 hrs **Maximum Marks:70**

SECTION – A

Answer any FOUR questions. Each question carries equal marks. (4*5 = 20)

1. Describe briefly about Mass selection
2. Explain about Hardy Weinberg Law
3. Define Heterosis and Explain about it with examples
4. What is Back cross and explain briefly
5. Write the Merits of synthetic varieties
6. What is Domestication and Explain briefly about it
7. Write a short note on Inbreeding depression

SECTION – B

Answer ALL the questions. Each question carries Ten marks (5*10=50)

1. a) Write an essay on types of pollination in plants
   (OR)
   b) Write an essay on self-incompatibility
2. a) Write an essay on Genetic bases of Heterosis and inbreeding depression
   (OR)
   b) Write an essay on Pedigree method of hybridization in plant breeding
3. a) Describe the introduction method in plant breeding
   (OR)
   b) Describe the hybridization method in plant breeding
4. a) Write an essay on mutation breeding
   (OR)
   b) Describe the breeding methods in asexually propagated plants.
5. a) Describe breeding methods in self-pollinated crops.
   (OR)
   b) Describe breeding methods in cross pollinated crops.

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
II Year Semester – IV
HORTICULTURE (Minor)
(CREDITS 3+1=4)

UNIT I

- Propagating structures- Plant propagation- Methods - Sexual and asexual – Propagation by cuttings – Definition of cutting – Stem cuttings – Leaf cuttings – Root cuttings.
- Propagation by Layering - Types of layering (tip, simple, compound, mound, trench, air layering)

- Natural modifications of layering (runners, suckers, stolon, offset)- Propagation by separation - Bulbs, corms; division (rhizome, stem tuber, tuberous roots).

UNIT II

- Grafting, budding -Rootstock and scion selection – Grafting methods – Attached scion methods of grafting, simple or approach grafting, detached scion methods of grafting (side grafting - Veneer grafting, apical grafting- epicotyl grafting, double, soft wood grafting, cleft grafting, tongue grafting, whip grafting) - Graft incompatibility – Types – Translocated and localized incompatibility; Budding – Methods of budding – T-budding, inverted T-budding, patch budding and ring budding - Top working.
- Principles of orchard establishment – Points to be kept in mind while selecting site for the establishment of orchards - Principles and steps in orchard establishment - Layout of orchards – Systems of planting - Square, rectangle, quincunx, hexagonal and contour systems of planting-their merits and demerits.

UNIT-III

- Principles and methods of training and pruning - Definition of training, objectives and training, principlesandmethods of training of fruit crops- Open centre, closed centre and modified leader systems their merits and demerits - Definition of pruning, objectives of pruning, principles and methods of pruning of fruit crops.
- Pollination - Self and Cross pollination, pollinizers and pollinators Fertilization and parthenocarpy – Types.

UNIT-IV

- Types of vegetables Gardens – Kitchen Garden, market garden, truck garden, vegetable forcing, garden for processing, seed production garden and floating garden. Ornamental garden types – Formal – Informal – Wild Garden – Parts/ features of an ornamental garden.
- Lawn making - Preparation of soil – Drainage – Digging – Manuring and grading – Methods of planting – Sowing of seeds – Dibbling – Turfing – Maintenance of lawn – Mowing – Rolling – Sweeping –Scraping – Raking – Weeding – Irrigation – Top dressing with compost and fertilizers - Diseases and other problems – Fairy ring – Pale Yellow Laws.

UNIT-V

- Use of plant bio-regulators (PBR) in horticulture – Introduction – Applications of PBR in fruit crops.
- Irrigation methods in horticulture crops - Different methods followed in horticultural crops (check basin, furrow, ring basin, basin, flood, pitcher, funnel, drip and sprinkler).
- Fertilizer application- Different methods of application to horticultural crops- Broad casting, top dressing, localized placement, contact placement Band placement, row placement, pellet, foliar application, starter solution, fertigation.

Practicals

1. Identification of garden tools.
2. Layout of kitchen garden.
3. Preparation of nursery bed (raised and flat beds) and sowing of seeds.
4. Practice of different asexual methods by divisions.
5. Practice of different asexual methods by cuttings.
6. Practice of different asexual methods by grafting.
7. Practice of different asexual methods by budding.
8. Practice of different asexual methods by layering.
9. Transplanting and care of vegetable seedlings.
10. Preparation of potting mixture, potting and repotting.

References

- Chadha, K.L. 2001. *Handbook of Horticulture.* ICAR, New Delhi.
- Jitendra Singh, 2012. *Basic Horticulture.* Kalyani Publishers. New Delhi.
- Randhawa, G.S. and Mukhopadhyaya, A. 1994. *Floriculture in India*. Allied Publishers Pvt. Ltd., New Delhi
- Kumar, N. 1997. *Introduction to Horticulture*. Rajyalakshmi Publications, Nagorcoil, Tamilnadu.

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
II Year Semester – IV
HORTICULTURE (minor)
(Credits 3+1=4)
MODEL QUESTION PAPER

Time:3 hrs **Maximum Marks:70**

Answer any **FOUR** questions. Each question carries equal marks. **(4*5 = 20)**

1. Give the steps in orchard establishment.
2. Write about the advantages of Seed Propagation.
3. What are the types of propagation by Separation?
4. Write about T or Shield budding.
5. What are the responses of plants to pruning?
6. Describe the methods of training of fruit crops.
7. What is parthenocarpy and write about its types.

SECTION - B

Answer all the questions. Each question carries **TEN** marks. **(5*10=50)**

1. a) What is cutting and give various propagations by cutting.

(OR)

b) What are the criteria for the selection of a site for orchard establishment?

2. a) Explain about different systems of planting in Horticultural crops.

(OR)

b) Explain different types of Layerings in Plant propagation.

3. a) Write about the systems of Training in Fruit crops with merits and demerits.

(OR)

b) Write about the Practical applications of Plant growth regulators in Horticulture crops.

4. a) Write briefly about the types of Vegetable gardens.

(OR)

b) Mention various methods of Irrigation of Horticultural crops and explain about Drip and sprinkler Methods.

5. a) Give the objectives, principles and the methods of pruning of fruit crops.

(OR)

b) Write about different methods of fertilizer application in Horticultural crops.

ANDHRA UNIVERSITY
B. Vocational course
AGRICULTURE(Honours)
II Year – Semester IV
2025-26 Admitted batch
Fundamentals of Economics (multi-disciplinary course)
(Credits 2+0=2)

UNIT I- BASIC CONCEPTS
Meaning of Economics, Nature and Scope of Economics, Micro & Macro Economics meaning and difference.

UNIT II- MICRO ECONOMIC CONCEPTS
Theory of Demand and Supply, meaning of utility, diminishing marginal utility; indifference curves analysis and consumers equilibrium; Production Function, Types of Costs and Revenue, Classification of Markets.

UNIT III- MACRO ECONOMIC CONCEPTS
Meaning - Concepts and measurement of National Income ; Definition of Money-Types and Functions ; Evolution and Functions of Central Bank, Commercial Banks; Meaning of Inflation- causes and Anti-inflationary policies, Monetary and Fiscal Policy.

References:

- Ahuja H. L. Principles of Micro economics, S. Chand Limited, Delhi.
- Koutsoyiannis, A. (1990), Modern Microeconomics, Macmillian.
- Gupta, S.B, Monetary Economics, S Chand & Co, New Delhi.
- Dwivedi,D.N , Microeconomics-Theory & Applications‖, Pearson.
- Stonier,A.W&Hague.Douglas.C ,A Text Book of Economic Theory, Pearson.
- Ackley.G , Macroeconomics: Theory And Policy, Macmillan, New York
- Dwivedi,D.N , Macroeconomics: Theory and Policy , Tata McGraw Hill Education
- Jhingan, M.L , Macroeconomics ,Vrinda Publications, New Delhi.

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
II Year Semester – IV
AGRICULTURE MARKETING (Skill enhancement course)
(CREDITS 2+0=2)

UNIT – I: Introduction to Agriculture and Agricultural Products
Introduction to agriculture and agricultural products (including agriculture, horticulture, sericulture, floriculture, aquaculture, genetic culture, and dairy products) – Agricultural marketing – Role of marketing – Concepts – Goods and services – Movement of products from farm to consumer – Middlemen – Moneylenders – Types of agricultural markets (basic classification)

UNIT – II: Structure and Facilities of Agricultural Markets
Basic structure and facilities of an agricultural market – Primary, secondary, and tertiary markets – Functioning of Market Yards – Market information – Rythu Bharosa Kendras (RBK) – Government market policies and regulations – Contract farming – Government apps for marketing of agricultural products

UNIT – III: Agricultural Marketing Practices and ICT
Planning production – Assembling – Grading – Transportation – Storage facilities – Price fixation – Dissemination of market information – Role of ICT – Marketing mix: Product element, Place element, Price element, Promotion element – Selection of target market – Government programs supporting agricultural marketing in India

Suggested Co-curricular Activities

1. Study visit to agricultural markets and Rythu Bharosa Kendras (RBK)
2. Invited lecture by field expert
3. Survey of various activities such as assembling, grading, storage, transportation, and distribution
4. Identify the demand for food processing units
5. Application of Government apps like *One Nation, One Market*
6. Assignments, group discussions, quizzes, etc.

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
II Year Semester – IV
AGRICULTURE MARKETING (Skill enhancement course)
(CREDITS 2+0=2)
MODEL QUESTION PAPER

Time: 1½ hrs (90 Minutes) **Max. Marks: 50**

SECTION – A

Answer any FOUR questions. Each question carries Five marks? **(4*5=20)**

1. What are the advantages of contract farming?
2. What are the functions of Rythu Bharosa Kendras (RBK)?
3. What is the difference between speculation vs hedging?
4. What is the role of NABARD in Agricultural marketing finance?
5. What is marketing channel and give one example for any crop.
6. What are the components of basic market structure?
7. What are the advantages of Grading?

SECTION – B

Answer any three questions. Each question carries Ten marks **(3*10=30)**

1. What are the different marketing functions and explain them in detail?
2. What are the differences in marketing of agricultural and manufactured goods?
3. A. What are the aims and objectives of ISI and

   B. AGMARK
4. A. What is the importance of agricultural marketing

   B. Define marketable surplus and marketed surplus. What are the factors affecting marketable surplus?
5. A. What is market and list out classification of markets.

   B. Classify markets based on competition and write the characteristic features of each market with example.

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
III Year Semester - V

1	Rain fed Agriculture and Watershed management	Major – core	3+1=4
2	Fundamentals of Crop Physiology	Major – elective	3+1=4
3	Pests of Horticultural crops and Productive Entomology	Major – elective	3+1=4
4	Principles of Seed Technology	Minor	3+1=4
5	Introduction to Production Economics and Farm Management	Minor	3+1=4
6	Environmental Education		2+0=2
		Total	**17+5=22**

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
III Year Semester – V
RAINFED AGRICULTURE AND WATERSHED MANAGEMENT (Major core)
(Credits 3+1=4)

UNIT - I

- Rainfed agriculture – introduction and definition – dimensions of the problem – area and production from dry lands in India and Andhra Pradesh –watersheds in India.
- Problems and prospects of rainfed agriculture in India – climate – rainfall pattern distribution – variabilities of rainfall – short rainy season – high intensity rainfall
- Problems and prospects of rainfed agriculture in India - soil characteristics – soil fertility status –soil moisture storage and retention capacity – heavy weed infestation-soil crust and their effect on crop growth and soils-its management.

UNIT - II

- Drought – definition – types of droughts – mechanism of crop adaptation under moisture deficit condition management strategies for drought.
- Tillage for rainfed crops – off-season tillage – primary tillage –secondary tillage – year-round tillage – sub soiling – setline cultivation – modern concepts of tillage- minimum tillage and zero tillage.
- Soil erosion – definition – losses due to erosion – types of water and wind erosion nature and extent of wind and water erosion – factors affecting erosion – universal soil loss equation

UNIT - III

- Management of crops in rainfed areas - Agronomic measures of soil and water conservation – choice of crop – crop geometry – tillage – contour cultivation – strip cropping – cover cropping – mulching – cropping systems and weed control-Mechanical measures of soil and water management.
- Watershed – definition – objectives and principles of water shed management components of watershed development programme – factors affecting watershed management.
- Water harvesting – importance, its techniques- Water harvesting structures – arid region – runoff farming – water spreading – micro catchments – semi arid region – farm ponds, check dams – percolation tank – dug wells – life saving irrigation

UNIT - IV

- *In-situ* moisture conservation measures – bund forming – bunding, ridge and furrow system conservation furrows- inter plot water harvesting, mulching – Broad Bed and Furrow (BBF) and leveling.
- Fertilizer use efficiency
- Efficient crops and varieties – cropping systems in rainfed areas – intercropping advantages – efficient inter cropping systems in different rainfed regions of Andhra Pradesh

UNIT - V

- Contingent crop planning for aberrant weather conditions in red and black soils.
- Evapotranspiration – measures to reduce evapotranspiration – weeding, use of mulches, chemicals, windbreaks and shelterbelts
- Land capability classification – alternate land use system
- Efficient utilization of water through soil and crop management practices - agronomic measures - mechanical measures for soil and water conservation – gully control – bench terraces – contour terracing – graded bund

RAIN FED AGRICULTURE AND WATERSHED MANAGEMENT (PRACTICAL)

1. Climate classification.
2. Rainfall analysis - Mean, standard deviation, variance and CV.
3. Onset and withdrawal of monsoons and determination of length of growing crop season.
4. Study on cropping pattern of different dryland areas.
5. Scheduling of supplemental irrigation based on crop ET demand.
6. Calculation of effective rainfall.
7. Determination of moisture availability index.
8. Study of cultural practices for mitigating moisture stress (mulching, plant density, depth of sowing, thinning and leaf removal).

References

- Reddy, S. R. and Prabhakar Reddy, G. 2015. Dryland agriculture. Kalyani Publishers.
- Arnon,I. 1972. Crop Production in Dry Regions (Vol.I), Leonard Hill Pub. Co, London.
- Dhruva Narayana, V.V., Sastry, G.S. and Patnaiak, V.S. 1999. Watershed Management in India. ICAR, New Delhi.
- Jeevananda Reddy,S.2002. Dryland agriculture in India: An agro-climatological and agro-meteorological perspective. B S publications.

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
III Year Semester – V
RAIN FED AGRICULTURE AND WATERSHED MANAGEMENT(Major-core)
(Credits 3+1=4)
MODEL QUESTION PAPER

Time:3 hrs **Maximum Marks :70**

SECTION - A

Answer any FOUR questions. Each question carries equal marks (4*5 = 20)

1. Explain the mechanism of crop adaptation under moisture stress conditions.
2. Explain briefly the management strategies for drought conditions.
3. What is water erosion? explain the types of water erosion.
4. What is wind erosion? explain briefly the 3 stages of wind erosion.
5. Explain the principles and objective of watershed management
6. Explain about the water harvesting structures in arid-region.
7. Explain briefly about mechanical measures of soil and water management.

SECTION - B

Answer all the questions. Each question carries TEN marks. (5*10=50)

1. a) What is watershed management? Explain the components of watershed development Programme.

(OR)

b) Write about briefly about the mechanism of wind and water erosion and write down the universal soil loss equation.

2. a) Explain briefly about crop management practices under rainfed areas.

(OR)

b) Explain briefly about the different methods of water harvesting in semi-arid regions

3. a) Explain briefly about the different in-situ moisture conservation techniques.

(OR)

b) Explain briefly about organic recycling and bio fertilizer use in rainfed areas.

4. a) Explain briefly about tillage operations carried out in rainfed conditions.

(OR)

b) Briefly elaborate about the modern concept of tillage.

5. a) Time and method of fertilizer application in rainfed areas.

(OR)

b) Briefly explain about the problems and prospects of rainfed agriculture in India.

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
III Year Semester – V
FUNDAMENTALS OF CROP PHYSIOLOGY (Major-Elective)
(CREDITS 3+1=4)

UNIT – I

Absorption of water – Diffusion and osmosis – water potential and its components – Importance of water potential – Active and passive uptake of water – Stomatal complex – Transpiration – Water use efficiency – Water use efficiency of C3, C4 and CAM plants – Water requirement / Transpiration ratio- Factors affecting WUE. Assimilation of mineral nutrients – Nitrate assimilation – Ammonium assimilation in plants – Biological nitrogen fixation – Free-living and symbiotic bacteria – Nodule formation – Nitrogenase enzyme complex.

UNIT – II

Photosynthesis – Reactions of photosynthesis – Energy synthesis – Principle of light absorption by plants – Light reactions – Cyclic and non-cyclic photophosphorylation – CO2 fixation – C3 and C4 pathways – Significance of C4 pathway – CAM pathway and its significance

UNIT – III

Photorespiration and its significance – Photosynthetic efficiency of C3, C4 and CAM plants – Factors affecting photosynthesis (light, CO2, temperature and water stress). Respiration – Energy balance – Significance of respiration – Oxidative Pentose Phosphate Pathway (OPPP) and its significance.

UNIT – IV

Physiology of flowering – Photoperiodism and flowering – Importance of photoperiodism – Classification of plants based on photoperiodic responses – Flowering hormones – Vernalization and flowering – importance of vernalization in agriculture. Plant growth regulators – Auxins – mode of action and physiological roles – Commercial uses – Gibberellins – mode of action and physiological roles – Commercial uses – Cytokinins – mode of action and physiological roles – commercial uses – ABA – mode of action and physiological roles Commercial uses – Ethylene – mode of action and physiological roles – Commercial uses.

UNIT – V

Post-harvest physiology – Dormancy – Types of dormancy – Advantages and disadvantages of dormancy – Fruit ripening – Climacteric and non-climacteric fruits – Metabolic changes during fruit ripening – Hormonal regulation of fruit ripening – Ripening induction and ripening inhibition – Seed viability and seed vigor – Tests of viability and vigor- Physiological maturity, harvestable maturity- Indices of physiological maturity in crops.

FUNDAMENTALS OF CROP PHYSIOLOGY (PRACTICAL)

1. Solution concentrations – Molarity, Normality and Molality
2. Seed vigor and viability tests, optimum conditions for seed germination,
3. Leaf area measurement
4. Measurement of water status in plants,
5. Measurement of water potential,
6. Measurement of Stomatal frequency and index photo
7. Leaf anatomy of C3 and C4 plants,
8. Measurement of photosynthesis by IRGA,
9. Effect of plant growth regulators on plant growth.
10. Diagnosis of various nutrient deficiency symptoms

References

- Taiz, L. and Zeiger, E. (2010). *Plant Physiology* (5th Edition). Sinauer Associates, Sunderland, MA, USA.
- Gardner, F.P., Pearce, R.B., and Mitchell, R.L. (1985). *Physiology of Crop Plants*. Scientific Publishers, Jodhpur.
- Noggle, G.R. and Fritz, G.J. (1983). *Introductory Plant Physiology* (2nd Edition). Prentice Hall Publishers, New Jersey, USA.

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ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
III Year Semester – V
FUNDAMENTALS OF CROP PHYSIOLOGY(Major-Elective)
(Credits 3+1=4)
MODEL QUESTION PAPER

Time: 3 Hours **Maximum Marks:70**

SECTION – A

Answer any FOUR questions. Each question carries equal marks. (4*5 = 20)

1. State the advantages and disadvantages of dormancy.
2. What is photorespiration and explain.
3. Write about Non cyclic Phosphorylation.
4. Write Briefly about Biological Nitrogen fixation.
5. Describe the classification of plants based upon Photoperiodism.
6. Give the importance of photophosphorylation.
7. What are the factors effecting Fruit ripening and write about climacteric and non-climacteric fruits.

SECTION – B

Answer all the questions. Each question carries TEN marks. (5*10=50)

1. a) Write about C3 photosynthetic carbon assimilation cycle.

(OR)

b) What is water use efficiency and explain Factors effecting the Water use Efficiency.

2. a) Write about the components of Water potential and its Importance.

(OR)

b) Write about physiological roles of Ethylene and ABA.

3. a) Write about C4 Photosynthetic carbon assimilation cycle.

(OR)

b) Explain Oxidative Pentose pathway and its significance.

4. a) Write about the Physiological role of Auxins in Plants.

(OR)

b) What is fruit ripening. Give the metabolic changes during fruit ripening.

5. a) Write about commercial uses of Gibberellin’s and cytokinin’s

(OR)

b) Write about tests of seed viability and vigor.

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
III Year Semester – V
PESTS OF HORTICULTURAL CROPS AND PRODUCTIVE ENTOMOLOGY
(Major-Elective)
(Credits 3+1=4)

UNIT – I: Sericulture Basics & Mulberry Cultivation
Importance and history of sericulture – Organizations involved in sericulture – Silkworm types – Mulberry cultivation (varieties, morphology of mulberry plant) – Methods of propagation – Nursery and main field preparation – Planting methods – Identification of nutrient deficiency symptoms – Identification of weeds – Herbicide application methods – Irrigation methods – Management practices

UNIT – II: Silkworm Rearing & Post-Cocoon Technology

Rearing house (types, disinfection, room and bed disinfectants) – Egg incubation methods – Chawki rearing – Rearing of late age worms – Spinning – Mounting – Montages – Harvesting – Physical and commercial characteristics of cocoons – Defective cocoons – Pests and diseases of silkworm and their management – Post cocoon technology (stifling) – By-products of sericulture – non-mulberry silkworm

UNIT – III: Apiculture & Lac Culture
Bee species (comparison) – Castes of bees – Morphology and biology – Apiary management practices – Bee pasturage – Foraging – Bee behavior – Bee dance – Seasonal variations – Honey extraction – Bee products (properties and uses) – Lac insect (biology, behavior, host plants, strains) – Inoculation – Harvesting – Processing – Natural enemies of lac insect – Lac products

UNIT – IV: Pests of Vegetable & Plantation Crops
Distribution – Bionomics – Symptoms of damage – Management strategies – Integrated pest management of solanaceous crops, cucurbits, crucifers, root crops, coconut, cashew nut, bhendi

UNIT – V: Pests of Fruit Crops
Distribution – Bionomics – Symptoms of damage – Management strategies – Integrated pest management of mango, citrus, banana, guava, pomegranate, apple

Practicals
1. Identification of Insect Pests, Diseases and Nutrient deficiencies in Mulberry Garden.
2. Rearing house and appliances of Silk worm.
3. Pests and Diseases of Silk Worm.
4. Silk worm Cocoons- Mounting, Harvesting and Stifling.
5. Honey bee- Types of Bee Hives, Bee Rearing Equipment and Honey Extraction.
6. Insect Pests, Predators and Diseases of Honey Bee.
7. Lac- Inoculation, Harvesting and Processing.
8. Identification of Pests on Vegetable Crops
9. Identification of Pests on Fruit crops.

References

- Vasanthraj David, B. and Ramamurthy, V.V. (2016). Elements of Economic Entomology. Popular Book Depot, Coimbatore.
- Vasanthraj David, B. and Ananthakrishnan, T.N. (2016). General and Applied Entomology. Tata McGraw-Hill Publishing House, New Delhi.
- Nair, M.R.G.K. (1986). Insects and Mites of Crops in India. ICAR, New Delhi.
- Khare, S.P. (1993). Stored Grain Pests and Their Management. Kalyani Publishers, Ludhiana.

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
III Year Semester – V
PESTS OF HORTICULTURAL CROPS AND PRODUCTIVE ENTOMOLOGY
(Major-elective)
(Credits 3+1=4)
MODEL QUESTION PAPER

Time: 3 Hours **Maximum Marks:70**

SECTION – A

Answer any FOUR questions. Each question carries equal marks. (4*5 = 20)

1. Write about the Planting systems of Mulberry.
2. Write about Nutrient deficiencies and their symptoms in Mulberry.
3. Write about the Pebrine disease of Silk worm.
4. Morphology of mulberry plants.
5. What is Bee Pasturing and Foraging?
6. Write about the inoculation methods of Lac and its precautions.
7. Write the differences between Chilli upward and downward curl.

SECTION – B

Answer all the questions. Each question carries TEN marks. (5*10=50)

1. a) Write about the Objectives, Precautions and Different types of Pruning in Mulberry.

   (OR)

   b) Write about the Chawki Rearing of Young Silk worms.
2. a) Describe the types rearing houses for silkworm. Add a note on room disinfectants.

   (OR)

   b) Write about different Species of Honey bee and their characters.
3. a) What are the different types of Lac Harvesting and write briefly about Lac Processing.

   (OR)

   b) Write about the method of injury and Damage symptoms of the following pests.

   1. Brinjal Shoot and Fruit Borer **2.** Cucurbit Fruit Fly **3.** Cabbage Diamond Back Moth
4. a) Write about the Identification, Method of Injury, Symptoms of damage and the control of Mango Hoppers.

   (OR)

   b) List out the Major Pests of Bhendi and write about the symptoms of damage and control of fruit borer and whitefly.
5. a) List out the Major Pests of banana and Write about the symptoms and control of rhizome weevil

   (OR)

   b) Write about the identification marks of the citrus fruit sucking moths, their symptoms of damage and Management.

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
III Year Semester – V
PRINCIPLES OF SEED TECHNOLOGY(Minor)
(CREDITS 3+1=4)

UNIT I – Introduction to seed and seed quality

- Seed – definition – Seed structure – Seed development and maturation Germination – phases of seed germination
- Dormancy – types of seed dormancy – Seed senescence – causes of seed senescence Seed quality characteristics – significance
- Classes of seed – Generation system of seed multiplication in seed supply chain.

UNIT II – Principles of seed production

- Seed replacement rate and varietal replacement – Seed Multiplication Ratio – Seed renewal period. Causes of varietal deterioration and maintenance Genetic and agronomic principles of seed production Factors affecting quality seed production
- Methods of seed production of varieties and hybrids.

UNIT III – Seed production techniques of agricultural crops

- Floral biology and pollination behavior – seed production techniques of varieties and hybrids of: rice, maize

UNIT IV – Seed production techniques of vegetable crops

- Floral biology and pollination behavior – seed production techniques of varieties and hybrids of: tomato, snake gourd, bitter gourd, ash gourd, ribbed gourd and bottle gourd

UNIT V – Post harvest seed handling techniques Threshing – methods

- Drying – methods of seed drying – advantages and disadvantages Seed processing – definition – importance
- Seed cleaning and grading – upgrading – equipment's – working principles
- Seed treatment – importance – types

PRINCIPLES OF SEED TECHNOLOGY (PRACTICAL)

1. Study of seed structure.
2. Seed dormancy breaking methods.
3. Acid delinting in cotton.
4. Detasseling techniques for hybrid seed production in maize.
5. Emasculation and dusting techniques for hybrid seed production in important field crops.
6. Practicing pre-germinative techniques, enhancing floral ratio and improving seed set in cucurbits
7. Fruit grading and seed extraction methods in vegetables – tomato, brinjal, chillies, bhendi and cucurbits.
8. Seed cleaning and grading techniques and detection of seed mechanical injury.

- **REFERENCES**
- Principles of Seed Technology; Author, P. K. Agrawal ; Contributor, Indian Council of Agricultural Research. Publications and Information Division

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
III Year Semester – V
PRINCIPLES OF SEED TECHNOLOGY(Minor)
(Credits 3+1=4)

MODEL QUESTION PAPER

Time: 3 Hours **Maximum Marks:70**

SECTION – A

Answer any **FOUR** questions. Each question carries **5 marks** **(4*5 = 20)**

1. Explain the safeguards for maintenance of genetic purity of seed.

2. Write a note on seed production methods for hybrids.

3. What is seed replacement rate? Explain in detail.

4. What is seed dormancy? Explain different types of seed dormancy.

5. Write about different classes of seeds.

6. Write about seed production technology of cucurbits.

7. What are the factors affecting quality seed production?

SECTION – B

Answer all questions. Each question carries **10 marks** **(5*10 = 50**)

1. a) Give a detailed note on seed production technology of Rice.

OR

b) Discuss the procedure followed for Maize seed production technology.

2. a) Explain generation system of seed multiplication in seed supply chain.

OR

b) What is seed drying? Explain different methods of seed drying along with principles and requirements.

3. a) Write about seed production technology of Tomato.

OR

b) Describe planning, layout, and establishment of seed processing plant.

4. a) Write about seed cleaning and grading.

OR

b) Write a detailed note on importance, types, and equipment required for seed treatment.

5. a) Describe the causes of varietal deterioration.

OR

b) Write the procedures for seed production of varieties.

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
III Year Semester – V
INTRODUCTION TO PRODUCTION ECONOMICS AND FARM MANAGEMENT(Minor)
(Credits 3+1=4)

UNIT I: Production Economics and Farm Management - Nature and Scope

- Production Economics: Meaning, Definition and Nature and Scope – Farm Management: Definition and Objectives of farm management – Production Economics Vs. Farm Management – Farm Management Decisions: Decision making process – Scope of farm management – Types and Systems of farming: Types – Specialized, Diversified, and Mixed farming – Systems of farming: Peasant Farming, State Farming, Capitalistic, Collective and Co – operative Farming.

UNIT II: Factor – Product Relationship

- Factor – Product relationship: Meaning – Agricultural Production Function: Meaning, Definition – Laws of Returns: Increasing, Constant and Decreasing Returns – Classical production function and Three stages of production – Elasticity of production –Types / Forms of Production functions – Linear, Cobb–Douglas and Quadratic – Cost Concepts and Cost curves: Total, Average and Marginal Costs – Economies of Scale – Economies of Size - Determination of Optimum Input and Output – Physical and Economic Optimum.

UNIT III: Factor – Factor Relationship

- Factor – Factor relationship: Meaning - Isoquant: Definition and Types, Isoquant map – Marginal Rate of Technical Substitution – Factor Intensity – Isocline – Ridge Line – Returns to Scale – Elasticity of Factor Substitution – Isocost line – Principle of Factor Substitution and Least Cost Combination of inputs – Expansion Path – Effect of input price changes on the least cost combination.

UNIT IV: Product – Product Relationship

- Product – Product relationship: Meaning – Production Possibility Curve – Marginal Rate of Product Transformation – Enterprise relationship: Joint Products, Complementary, Supplementary and Competitive Products – Iso revenue line – Optimum Combination of Products – Principle of Equi–Marginal Returns – Principle of Opportunity Cost and Minimum Loss Principle.

UNIT V: Farm Planning and Budgeting

- Farm Planning: Importance – Characteristics of good Farm Plan – Farm planning procedure
- Budgeting: Definition and Types: Partial budgeting, Enterprise budgeting, Complete budgeting and Cash flow budgeting – Limitations of budgeting – Linear Programming: Assumptions – Linear Programming Model: Definition, Graphical solution, Advantages and Limitations – Risk and Uncertainty: Definition – Types of Risk and Uncertainty – Safeguards against Risk and Uncertainty.

PRACTICAL

1. Computation of depreciation cost of farm assets.
2. Determination of most profitable level of inputs use in a farm production process.
3. Application of equi-marginal returns/ opportunity cost principle in allocation of farm resources.
4. Determination of least cost combination of inputs.
5. Selection of most profitable enterprise combination.
6. Farm holding survey.
7. Application of cost principles including CACP concepts in the estimation of cost of crop and livestock enterprises.
8. Farm business analysis, Preparation of farm plan and budget, farm records and accounts and profit & loss accounts.

References

- Johl, S.S. and Kapoor, T.R. (1973), Fundamentals of Farm Business Management, Kalyani Publishers, Ludhiana.
- Sankhayan, P.L. (1988), Introduction to the Economics of Agricultural Production, Prentice Hall of India Private Limited, New Delhi-110 001.
- Raju, V.T. and Rao, D.V.S. (1990), Economics of Farm Production and Management, Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi-110 001.
- Dhondyal, S.P. (1985), Farm Management, Friends Publication Meerut (India).
- Kahlon, A.S. and Karam Singh (1992), Economics of Farm Management, Allied Publishers, New Delhi. 6. Doll, John P. and Orazem. F. (1984), Production Economics: Theory with Application, John Wiley and Sons, New York.

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
III Year Semester – V
INTRODUCTION TO PRODUCTION ECONOMICS AND FARM MANAGEMENT(Minor)
(Credits 3+1=4)
MODEL QUESTION PAPER

Time: 3 Hours **Maximum Marks:70**

SECTION – A

Answer any **FOUR** questions. Each question carries equal marks. (4*5 = 20)

1. Define farm management? Explain it's scope.
2. What is farm plan? What are the key features of good farm plan.
3. Write down the advantages and disadvantages of diversified farming.
4. Differentiate between farm budgeting and linear programming.
5. What is production economics and list out its objectives.
6. Differentiate law of variable proportions and returns to scale.
7. What is isoquant? List out its characteristics.

SECTION – B

Answer **All** the questions. Each question carries **TEN** marks (5*10 = 50)

1 a) List out the economic principles applied in farm management. Explain in detail law of variable proportions.

(OR)

b) Elaborate systems of farming in detail

2 a) Explain law of returns with the help of graphs and tables.

(OR)

b) i) What is risk and uncertainty. Explain the sources of risk and uncertainty.
ii) What are methods reducing the risk and uncertainty.

3 a) Explain the key features of three stages of production function.

(OR)

b) Explain the least cost combination of inputs by graphical, algebraic and arithmetic methods.

4 a) Explain and draw different types of product-product relationships.

(OR)

b) What is farm planning and budgeting. Explain the basic steps in farm planning and budgeting.

5 i) Production possibility curve ii) Ridge lines

(OR)

b) Determine optimum combination of products in algebraic, graphic and tabular methods.

ANDHRA UNIVERSITY
B. Vocational course
Agriculture- Honours
III Year – Semester V
2025-26 Admitted batch
Environmental Education
(Credits 2+0=2)

As per APSCHE

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
III Year Semester – VI

1	Manures, Fertilizers and Soil Fertility Management	Major – elective	3+1=4
2	Weed and Water management	Major – elective	3+1=4
3	Production Technology of Fruits and Vegetables	Minor	3+1=4
4	Principles of Organic Farming	Minor	3+1=4
5	Semester Internship (Minimum of 180 hours (8 weeks) with 3 credits)		3
		Total	**12+7=19**

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
III Year Semester – VI
MANURES, FERTILIZERS AND SOIL FERTILITY MANAGEMENT
(Major elective)
(Credits 3+1=4)

UNIT I

- Manures – classification of manures – bulky organic manures - methods of composting – concentrated organic manures – green manures – biogas plant – vermicomposting

UNIT II

- Commercial fertilizers – straight fertilizers – Nitrogen fertilizers – phosphorus fertilizers – potassic fertilizers

UNIT – III

- Complex fertilizers – mixed/ bulk blended fertilizers – secondary nutrient fertilizers – micronutrient fertilizers – fertilizer control order and regulations

UNIT IV

- Methods of fertilizer application – Seed coating, palletization, seedling dipping – Nutri seed pack – Soil Application – Foliar spray – Fertigation – water soluble fertilizers, fertigation scheduling (Fertilizer – water interaction, fertilizer solubility, comparison of fertilizer application methods).

UNIT V

- Nutrient management concepts – INM, STCR, IPNS, SSNM and RTNM. Nutrient use efficiencies of major and micronutrients and enhancement techniques (Soil, Cultural and Fertilizer strategies) - Soil health – Quality indices and their management

References

- **Indian Society** of Soil Science.2012. Fundamentals of Soil Science. IARI, New Delhi.
- Yawalkar K.S, Agarwal, T.P and Bokde, S 1995. Manures and Fertilisers. Agril. Publishing House, Nagpur
- Samuel Tisdale, Nelson Werner L, Beaton James D and Havlin John L. 2005. Soil Fertility and Fertilizers: An Introduction to Nutrient Management, Macmillian Publishing Co., New York.
- D. K .Das 2014. Introductory Soil Science. Kalyani Publishers, New Delhi

MANURES, FERTILIZERS AND SOIL FERTILITY MANAGEMENT (PRACTICAL)

1. Introduction to analytical instruments
2. Soil Sampling registration
3. Identification of fertilizers
4. Utilization of soil testing kit
5. Study of Soil Fertility Map
6. Study of preparation of different compost method
7. Study of vermicomposting method
8. Study of fertilizer calculations

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
III Year Semester – VI
MANURES, FERTILIZERS AND SOIL FERTILITY MANAGEMENT
(Major elective)
MODEL QUESTION PAPER

Time: 3hrs **Maximum Marks:70**

SECTION – A

Answer any **FOUR** questions. Each question carries equal marks. (4*5 = 20)

1. Give an account on nutrient content of different fertilizers and manures
2. Write a note on Fertilizer Control Order.
3. Write about concept of Integrated Nutrient Management
4. What are fertilizers and manures? Give a detailed differentiation of fertilizers and manures
5. Briefly explain soil health and management
6. Write a short note on SSNM and RTNM.
7. What is green manuring and explain about green manure crops.

SECTION – B

Answer **All** the questions. Each question carries **TEN** marks (5*10 = 50)

1. a) Write about different methods of fertilizer application

(OR)

b) Discuss nutrient use efficiencies of nutrients and enhancement techniques.

2. a) Write and explain detailed classification of fertilizers

(OR)

b) Explain about biogas plant

3. a) Write short note on different composting techniques

(OR)

b) Write an essay on specialty/ complex/ mixed fertilizers

4. a) Discuss different types of manures in detail

(OR)

b) What is fertigation? Explain. Give in detail about fertigation scheduling.

5. a) Write about different nutrient management concepts and explain them

(OR)

b) Write about manufacturing process for Urea, DAP and MOP

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
III Year Semester – VI
WEED AND WATER MANAGEMENT (Major -elective)

(Credits 3+1=4)

UNIT–I

Weed Biology and Ecology Weeds: Introduction, Definitions; harmful and beneficial effects, classification, propagation, dissemination and weed seed dormancy; Weed biology and ecology; Critical periods of crop weed competition and allelopathy. Principles of Weed Management Concepts of weed prevention, control and eradication; Methods of weed management: cultural, mechanical, chemical, biological and; Integrated weed management.

UNIT–II

Herbicides: Definition – advantages and limitation of herbicide usage in India; Herbicide classification, formulations, methods of application; Introduction to Adjuvants. Weed management in field crops; aquatic, problematic, invasive alien weeds.

UNIT–III

Importance and History of Irrigation: Role of water in plant growth – Importance of irrigation – Water resources and irrigation potential of India – History and development of irrigation in India – Soil – water– plant relationship – Soil Plant Atmospheric Continuum (SPAC) – Hydrological cycle – Absorption of water – Evapotranspiration – Plant water stress and its effect and methods to overcome stress.

UNIT–IV

Crop Water Requirement and Management: Crop water requirement – consumptive use – Definition and estimation – Factors affecting water requirement – Effective rainfall – Critical stages for irrigation – Water requirement of crops – Water management for major field crops.

UNIT–V

Scheduling of irrigation – Different approaches – Water use efficiency – Methods to improve WUE – Conjunctive use of surface and ground water. Quality of irrigation water – Agronomic practices for use of poor-quality water (saline, effluent and sewage water) for irrigation**.**

References

- Principles and practices of modern weed management by o.p. gupta
- Principles and practices of weed management by t.k.das
- Sharma, R.K.and Sharma, T.K. 1993. Irrigation and Drainage. Vol-I. Oxford IBH publishing Co.PVT.Ltd, New Delhi.

WEED AND WATER MANAGEMENT (PRACTICAL)

1. Identification, classification and characterization of terrestrial weeds.
2. Identification, classification and characterization of aquatic weeds and parasitic weeds.
3. Estimation of soil weed seed bank.
4. Identification, classification and characterization of herbicides.
5. Herbicide application techniques and spray equipment.
6. Land leveling and land shaping – Beds and channels – check basin – ridges and furrows-border strips – broad bed furrow method of irrigation.
7. Operation and maintenance of sprinkler irrigation systems and drip irrigation systems.
8. Scheduling of irrigation based on simple techniques and devices.

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
III Year Semester – VI
WEED AND WATER MANAGEMENT (Major -elective)
(Credits 3+1=4)
MODEL QUESTION PAPER

Time: 3hrs **Maximum Marks:70**

SECTION – A

Answer any **FOUR** questions. Each question carries equal marks. (4*5 = 20)

1. Explain briefly about weed seed dormancy.
2. Explain about the different modification structures adopted for dispersal by wind.
3. Explain briefly the role of water in plant growth.
4. Explain the critical period of crop weed competition.
5. Explain plant water stress and its effect and methods to overcome stress.
6. Explain briefly about allelopathy.
7. Explain briefly about the importance of irrigation and explain soil plant atmospheric (SPAC).

SECTION – B

Answer **ALL** the questions. Each question carries **TEN** marks. (5*10=50)

1. a) explain briefly the principles of weed management.

(OR)

b) Explain the different methods of weed control.

2. a) Explain briefly the herbicide classification and its formulation.

(OR)

b) Explain the different methods of herbicide application.

3. a) Explain with a neat diagram about the hydrological cycle.

(OR)

b) Discuss about weed biology and ecology and add a note on allelopathy.

4. a) Write briefly about the water management for major crops.

(OR)

b) What is water use efficiency? Explain different methods to improve water use efficiency.

5. a) Mention the different methods of irrigation and explain them.

(OR)

b) Explain briefly about the agronomic practices for use of poor-quality water for irrigation.

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
III Year Semester – VI
PRODUCTION TECHNOLOGY OF FRUITS AND VEGETABLES (Minor)
(Credits 3+1=4)

UNIT – I

- Fruits- Mango, Banana, Citrus, Grape - Botanical Name – Family – Origin – Area – Production- Improved varieties and cultivation practices such as time of sowing - Sowing - Transplanting techniques - Planting distance - Fertilizer requirements - Irrigation - Weed management - Harvesting - Yield - Storage

UNIT – II

- Guava, Sapota, Papaya, Botanical Name – Family – Origin – Area – Production- Improved varieties and cultivation practices such as time of sowing - Sowing - Transplanting techniques - Planting distance - Fertilizer requirements - Irrigation - Weed management - Harvesting - Yield - Storage

UNIT – III

- Importance of vegetables and spices in human nutrition and national economy
- Classification of vegetables - 1) Botanical 2) Based on Hardiness 3) Parts Used 4) Method of culture 5) Season.
- Tomato, Brinjal, Chilli, Okra - Botanical Name – Family – Origin – Area – Production- Improved varieties and cultivation practices such as time of sowing - Sowing - Transplanting techniques - Planting distance - Fertilizer requirements - Irrigation - Weed management - Harvesting - Yield - Storage

UNIT – IV

- Cucurbits – Flowering, sex expression, sex ratio - Cucumber, Ridge gourd, Bitter gourd, Bottle gourd - Botanical Name – Family – Origin – Area – Production- Improved varieties and cultivation practices such as time of sowing - Sowing - Transplanting techniques - Planting distance - Fertilizer requirements - Irrigation - Weed management - Harvesting – Yield
- Cole crops- Cabbage and Cauliflower - Botanical Name – Family – Origin – Area – Production- Improved varieties and cultivation practices such as time of sowing - Sowing - Transplanting techniques - Planting distance - Fertilizer requirements - Irrigation - Weed management - Harvesting - Yield

UNIT – V

- Peas and beans (Cluster bean, French bean, Dolichos) Botanical Name – Family – Origin – Area – Production- Improved varieties and cultivation practices such as time of sowing - Sowing - Transplanting techniques - Planting distance - Fertilizer requirements - Irrigation - Weed management - Harvesting - Yield
- Root crops (Carrot and Radish) - Botanical Name – Family – Origin – Area – Production- Improved varieties and cultivation practices such as time of sowing - Sowing - Transplanting techniques - Planting distance - Fertilizer requirements - Irrigation - Weed management - Harvesting – Yield

- Bulb crops – Onion and Garlic - Botanical Name – Family – Origin – Area – Production- Improved varieties and cultivation practices such as time of sowing - Sowing - Transplanting techniques - Planting distance - Fertilizer requirements - Irrigation - Weed management - Harvesting – Yield

PRODUCTION TECHNOLOGY OF FRUITS AND VEGETABLES (PRACTICAL)

1. Identification of vegetables, Fruits and their seeds.
2. Nursery raising techniques of vegetable crops.
3. Direct seed sowing and transplanting.
4. Study of morphological characters of different vegetables and Fruits
5. Intercultural operations in vegetable crops.
6. Seed extraction methods in vegetables and Fruits
7. Harvest indices and maturity standards of vegetable crops.
8. Harvesting and preparation for market.

References

- Pranab Hazra, A. Chattopadhyay, K. Karmakar and S. Dutta. 2010. *Modern Technology in Vegetable Production.* New India Publishing Agency, New Delhi.
- Neeraj Pratap Singh, .2007. *Basic Concepts of Vegetable Science*. International Book Distributing Co. New Delhi. Academic Press, New Delhi.
- Nempal Singh, Singh, D.K., Singh, Y.K. and Virendra Kumar. 2006. *Vegetable Seed Production Technology.* International Book Distributing Co. Lucknow.
- Prem Singh Arya and S. Prakash 2002. *Vegetables Growing in India*. Kalyani publishers, New Delhi

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
III Year Semester – VI
PRODUCTION TECHNOLOGY OF FRUITS AND VEGETABLES (Minor)
(Credits 3+1=4)
MODEL QUESTION PAPER

Time: 3hrs **Maximum Marks:70**

SECTION - A

Answer any FOUR questions. Each question carries equal marks. **(4*5 = 20)**

1. Write the importance of spices in human nutrition and national economy?
2. Write about the Propagation methods in Banana.
3. What is Papain and write about Papain Extraction.
4. Give the botanical classification of Vegetables.
5. Write about the varieties of Brinjal based on colour and shape of fruit.
6. Write about the flowering and Sex expression in Cucurbits.
7. Write about the Interculture practice in Bitter Gourd.

SECTION - B

Answer all the questions. Each question carries TEN marks. **(5*10=50)**

1. a) Write briefly about Hybrid varieties of Mango.

(OR)

b) Write about the Intercultural operations in Banana.

2. a) Write about different types of propagations in Citrus.

(OR)

b) Write about different Training systems in Grapes.

3. a) Write about the Importance of Vegetables in Human Nutrition.

(OR)

b) Discuss the improved varieties, fertilizer requirement, irrigation and weed management in Tomato.

4. a) Write about the package of practices in Cauliflower.

(OR)

b) Differentiate the types of Carrot and Write about the Importance and Classification of Dolichos Bean.

5. a) Write about Cucurbits and List out all the Cucurbitaceous vegetables with Scientific names.

(OR)

b) Answer the following

1.Harvesting, Curing, Storage and Bolting in Onion
2.Importance of Garlic

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
III Year Semester – VI
PRINCIPLES OF ORGANIC FARMING (Minor)
(Credits 3+1=4)

UNIT - I

- Organic farming – definition – need – scope – principles – characteristics - relevance to modern agriculture.
- Different ecofriendly farming systems- biological farming, natural farming, regenerative agriculture – permaculture - biodynamic farming.
- Relevance of organic farming to A.P, India, and global agriculture and future prospects- advantages - barriers.

UNIT - II

- Initiatives taken by the central and state governments, NGOs and other organizations for promotion of organic agriculture in India.
- Organic nutrient sources and their fortification – organic manures- methods of composting
- Green manures- bio fertilizers – types, methods of application – benefits and limitations.

UNIT - III

- Nutrient use in organic farming-scope and limitations.
- Nutrient management in organic farming.
- Organic ecosystem and their concepts.
- Choice of crops and varieties in organic farming – crop rotations – need and benefits – multiple cropping.

UNIT - IV

- Fundamentals of insect, disease and weed management under organic mode of production-cultural-biological methods-non chemical pest & disease management.
- Botanicals- pyrethrum, neem seed kernel extract, neem seed powder, soluble neem formulations, neem oil.
- Operational structure of NPOP – other agencies for organic production.

UNIT - V

- Inspection – certification - labelling and accreditation procedures for organic products.
- Processing, - economic consideration and viability.
- Marketing and export potential of organic products – national economy

PRINCIPLES OF ORGANIC FARMING (PRACTICAL)

1. Visit to organic farm to study the various components, identification and utilization of organic products.
2. Compost making- aerobic and anaerobic methods
3. Vermicompost preparation
4. Preparation of enriched farm yard manure
5. Biological nitrogen fixers.
6. Methods of application of Bio-pesticides (Trichocards, BT, NPV)
7. Preparation of neem products and other botanicals for pest and disease control
8. Preparation of green pesticides (panchagavya, beezamrutam, jeevamrutam, ghanajeevamrutam, dravajeevamrutam).
9. Different methods of biofertilizer applications.

References

- Arun K. Sharma. 2002. A Hand book of organic farming. Agrobios, India. 627p.
- Palaniappan, S.P and Annadurai, K.1999. Organic farming-Theory and Practice. Scientific publishers, Jodhpur, India. 257p.
- Mukund Joshi and Prabhakarasetty, T.K. 2006. Sustainability through organic farming. Kalyani publishers, New Delhi. 349p.
- Balasubramanian, R., Balakishnan, K and Siva Subramanian, K. 2013. Principles and practices of organic farming. Satish Serial Publishing House. 453p
- Tarafdar, J.C., Tripathi, K.P and Mahesh Kumar, 2009. Organic AGRICULTURE (Honours). Scientific Publishers, India. 369p.
- Tiwari, V.N., Gupta, D.K., Maloo, S.R and Somani, L.L. 2010. Natural, organic, biological, ecological and biodynamic farming. Agrotech Publishing Academy, Udaipur. 420p.
- Dushyent Gehlot. 2005. Organic farming- standards, accreditation, certification and inspection. Agrobios, India. 357p

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
III Year Semester – VI
PRINCIPLES OF ORGANIC FARMING(Minor)
(Credits 3+1=4)
MODEL QUESTION PAPER

Time: 3 Hours **Maximum Marks:70**

SECTION – A

Answer any FOUR questions. Each question carries equal marks. (4*5 = 20)

1. What are the essential characteristics of Organic Farming?
2. What is Vermicomposting and write about Vermiculture.
3. What are the desirable characters of Green Manuring?
4. Write about the Indore and Bangalore method of composting?
5. Write about weed management in Organic farming.
6. Write briefly about zero budget natural farming.
7. Write about the Economic considerations of Organic Culture.

SECTION - B

Answer all the questions. Each question carries TEN marks. (5*10=50)

1. a) Write about the Principles of Organic farming.
   (OR)
   b) What are the components in organic farming for Sustainable crop production?
2. a) What are the Advantages of Organic farming?
   (OR)
   b) What are the Government policies on promoting Organic farming?
3. a) Write about different types of Organic manures.
   (OR)
   b) Write briefly about biological methods of Insect pest Management in Organic farming?
4. a) Write about the Operational structure of NPOP.
   (OR)
   b) Write about the Accreditation procedures for Organic Products.
5. a) Write about the concepts of Organic ecosystem.
   (OR)
   b) Write about the Marketing and Export potential of Organic farming

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
IV Year Semester – VII

1	Agriculture Microbiology	Major – core	3+1=4
2	Insect Ecology and Integrated Pest Management	Major – core	3+1=4
3	Farm Power and Machinery	Major – core	3+1=4
4	Post-harvest Management and Value Addition of Fruits and Vegetables	Major – elective	3+1=4
5	Farming systems and Sustainable Agriculture	Major – elective	3+1=4
6		Open online transdisciplinary course	2+0=2
7		Indian knowledge system-Audit course	-
		Total	**17+5=22**

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
IV Year Semester – VII
AGRICULTURAL MICROBIOLOGY(Major-core)
(Credits 3+1=4)

UNIT I

Protection Against Infection, Applied Areas of Microbiology, Bacterial Cell Structure, Procaryotic and Eucaryotic Cells- Differences, Morphological Types of Bacteria, External Structures, Cell Wall Composition, Differences in the Cell Wall of Gram Positive and Gram-Negative Eubacteria

UNIT II

Structures Internal to Cell Wall, Bacterial Growth, Cell Division and Reproduction in Bacteria, Heterotrophy, Respiration, Glycolysis, Ed Pathway, Pentose Phosphate Pathway, TCA Cycle, Electron Transport Chain, Glyoxylate Cycle, Anaerobic Respiration

UNIT III

Fermentation, Different Types of Fermentation, Chemoautotrophy- Importance, Prototrophy, Photosynthetic Light Reactions -Cyclic and Non-Cyclic Photo Phosphorylation, Bacteriophages, Types of Bacteriophages, Lytic and Lysogenic Cycles, Bacterial Genetics, Mutation, Types of Mutations

UNIT IV

Genetic Recombination, Bacterial Transformation in Pneumococcus, Genetic Recombination by Conjugation, Transduction In Salmonella, Soil – Microbiology, Important Groups of Microbes and their Role in Fertility of Soil and Plant Growth

UNIT V

Carbon Cycle, Nitrogen Cycle, Biological Nitrogen Fixing Systems and Examples, Water Microbiology, Microbiological Examination of Water, Food Microbiology, Microbial Spoilage of Foods, Food Preservation, Industrial Microbiology, Beneficial Microorganisms in agriculture, Microbial Insecticides, Microbial Biocontrol, Biodegradation

AGRICULTURAL MICROBIOLOGY (PRACTICAL)

1. Introduction to microbiology laboratory and its equipment's
2. Microscope- parts, principles of microscopy, resolving power and numerical aperture
3. Methods of sterilization
4. Nutritional media and their preparations
5. Enumeration of microbial population in soil- bacteria, fungi, actinomycetes
6. Methods of isolation and purification of microbial cultures.
7. Isolation of Rhizobium from legume root nodule
8. Isolation of Azotobacter from soil
9. Isolation of Azospirillum from roots
10. Staining and microscopic examination of microbes.

REFERENCES:

- Essentials of Agricultural Microbiology;Yogranjan, Pranay Kumar
- Agricultural Microbiology; G.Ranga Swamy, D.J.Bhagya Raj
- Agricultural Microbiology; N.S.Subba Rao
- *Soil Microbiology*; N.S. Subbarao

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
IV Year Semester – VII
AGRICULTURAL MICROBIOLOGY(Major-core)
(Credits 3+1=4)
Model Question Paper

Time: 3hrs **Maximum Marks:70**

SECTION - A

Answer any **FOUR** questions. Each question carries equal marks. **(4*5 = 20)**

1. Differentiate between eukaryotic and prokaryotic cells.
2. Explain different morphological types of bacteria?
3. Write differences between gram negative and gram-positive bacteria.
4. Write a brief note on cell division and reproduction in bacteria.
5. Pentose phosphate pathway.
6. Explain anaerobic respiration.
7. Explain types of mutations

SECTION - B

Answer **all** the questions. Each question carries **TEN** marks **(5*10=50)**

1. a) Explain the typical bacterial structures and functions of bacterial cells.

(OR)

b) Explain glycolysis.

2. a) Explain TCA cycle and electron transport chain in bacteria.

(OR)

b) Write in detail about nitrogen cycle.

3. a) Write a short note on fermentation and explain different types of fermentation

(OR)

b) Explain carbon cycle

4. a) Write an essay on food preservation.

(OR)

b) Write about beneficial microorganisms in agriculture

5. a) What is microbial bio control? Explain mechanisms of biocontrol. State the advantages and disadvantages.

(OR)

b) Write in detail about applied areas of microbiology.

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
IV Year Semester – VII
INSECT ECOLOGY AND INTEGRATED PEST MANAGEMENT (Major core)
(CREDITS 3+1=4)

UNIT I

Ecology – introduction - importance of insect ecological studies in integrated pest management (IPM) - environment and its components - Abiotic factors - temperature-its effect on the development, Moisture- adaptation of insects to conserve moisture - rainfall - its effect on emergence, movement and oviposition of insects. Light Air currents - effect on dispersal of insects – edaphic factors – water currents. Biotic factors – food - classification of insects according to nutritional requirements - other organisms - inter and intra specific associations - beneficial and harmful associations of parasitoids. Concept of balance of life – biotic potential and environmental resistance. Pest surveillance –pest forecasting - Different categories of pests – regular, occasional, seasonal, persistent, sporadic, epidemic and endemic pests with examples.

UNIT II

IPM – introduction, principles of IPM – tools or components of IPM – practices, scope and limitations of IPM. Host-plant resistance- principles of host plant resistance Cultural control- normal cultural practices which incidentally control the pests with examples; Mechanical control- different mechanical methods of pest control with examples. Physical control – use of inert carriers against stored product insects - steam sterilization – solarization - solar radiation - light traps - flame throwers etc.; Legislative measures - importance of quarantine

UNIT III

Biological control - types of biological control - Kinds of parasitism - Predators – predatism – qualities of insect predator – differences between predator and parasite- Microbial control - Bacteria, viruses, fungi, nematodes and protozoa - scavengers - their importance- chemical control - importance and ideal properties of insecticide - classification of insecticides - toxicity evaluation of insecticides. Formulations of insecticides -Inorganic insecticides - arsenic Compounds - Plant derived insecticides - source – properties and uses. Synthetic organic insecticides – chlorinated hydrocarbons

UNIT IV

Rodenticides – zinc phosphide, aluminum phosphide, bromadiolone; Acaricides- Sulphur, dicofol, tetradifon and propargite; Fumigants - aluminum phosphide Application techniques of spray fluids - high volume, low and ultra-low volume sprays - phytotoxic effects of insecticides - advantages and limitations of chemical control – safe use of pesticides.

UNIT V

Mites- Importance - morphology and biology of mites - Classification - host range Rodents- Important major rodent species - nature of damage-management- other non-insect pests - important bird, and animal pest damage to crops- management strategies- House hold and livestock insect pest

INSECT ECOLOGY AND INTE GRATED PEST MANAGEMENT(PRACTICAL)

1. Study of distribution patterns of insects in crop ecosystems
2. Sampling techniques for the estimation of insect population and damage
3. Pest surveillance through light traps, pheromone traps and forecasting of pest incidence
4. Acquaintance of mass multiplication techniques of important predators
5. Acquaintance of mass multiplication techniques of important parasitoids – egg, larval and pupal parasitoids
6. Acquaintance of mass multiplication techniques of important entomopathogenic fungi
7. Identification of different types of nematodes
8. Identification of different mite species
9. Identification of different non-insect pests-birds, rodents, crabs and snails
10. Identification of different non-insect pests-house hold and veterinary insect pests

REFERENCES:

- Dhaliwal GS and Ramesh Arora 2001. Integrated pest management: Concepts and approaches, Kalyani Publishers Ludhiana
- Gautam,R.D 2008 Biological Pest Suppression. Westville publishing House New Delhi
- Yazdani,S.S and Agarwal,M.L.1979. Elements of Insect Ecology. Narosa Publishing House,New Delhi
- Upadhyaya K.P and Kusum Dwivedi.1997. A Text Book of Plant Nematology Aman Publishing House, Meerut

ANDHRA UNIVERSITY
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AGRICULTURE(Honours)
2025-26 Admitted Batch
IV Year Semester – VII
INSECT ECOLOGY AND INTEGRATED PEST MANAGEMENT (Major core)
(CREDITS 3+1=4)
MODEL QUESTION PAPER

Time: 3hrs **Maximum Marks:70**

SECTION- A

Answer any **FOUR** questions. Each question carries equal marks. **(4*5 = 20)**

1. Pest surveillance and pest forecasting
2. Explain different categories of pests?
3. Write a short note on host plant resistance.
4. Explain legislative measures and write the importance of quarantine.
5. Classification of insecticides.
6. Application techniques of spray fluids and write the Phytotoxic effects of insecticides.
7. State the advantages and disadvantages of chemical control

SECTION - B

Answer **all** the questions. Each question carries **TEN** marks**.** **(5*10=50)**

1. a) What is ecology and its importance in IPM .Explain environmental factors effecting insects
   (OR)
   b) Explain concepts and principles of IPM.
2. a) Write about cultural and mechanical control of insects
   (OR)
   b) Write about physical control of insects
3. a) Write an essay on biological control of insects
   (OR)
   b) What is chemical control and state the importance and ideal properties of insecticides
4. a) Write in detail about formulations of insecticides
   (OR)
   b) Important pests of domestic and veterinary importance and their management.
5. a) IPM of rodents.
   (OR)
   b) Write about plant derived insecticides.

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IV Year Semester – VII
FARM POWER AND MACHINERY(Major-core)
(CREDITS 3+1=4)

UNIT I:

Components of IC engine. Valve working and valve timing diagram. Tillage- Objectives- Classification- Primary Tillage and Secondary tillage implements Types of tillage

UNIT II:

Primary tillage implements- Mould board Plough, Disc Plough, Chisel Plough, Subsoiler, Components and Functions, Types, Advantages and Disadvantages.

UNIT III:

Secondary Tillage implement– Harrows- Types- Animal drawn harrow- Tractor drawn harrow.

UNIT IV:

Cultivators- Types Land Forming Equipment-Wetland Equipment –Puddlers and Green Manure Tramplers - cage wheels.

UNIT V:

Planting and fertilizing equipment's- Methods of sowing- study of animal drawn seed cum ferti drill- study of tractor drawn seed cum ferti drill. Planters- potato, sugarcane planter, study of inter cultivation equipment's- weeders.

FARM POWER AND MACHINERY (PRACTICALS)

1. Study of different components of I.C. engine
2. Study of two stroke cycle engine
3. Study of four stroke cycle engine
4. Familiarization with operation of power tiller
5. Familiarization with different types of primary and secondary tillage implements - Mould plough
6. Disc plough and disc harrow
7. Familiarization with seed cum-fertilizer drills their seed metering mechanism and calibration - Planters and transplanter
8. Familiarization with different types of sprayers and dusters
9. Familiarization with different inter- cultivation equipment
10. Familiarization with harvesting and threshing machinery.

TEXT BOOKS:

- JagdishwarSahay (1977), Elements of Agricultural Engineering, Standard Publications, New Delhi.
- Pakirappa and Naresh V (2014), Energy sources and power plant engineering, radiant Publishing House, Hyderabad.
- Michel A.M, and Ojha T.P, Principles of Agricultural Engineering, Vol.I, Jain Brothers, New Del

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AGRICULTURE(Honours)
2025-26 Admitted Batch
IV Year Semester – VII
FARM POWER AND MACHINERY(Major-core)
(Credits:3+1=4)
MODEL QUESTION PAPER

TIME:3hrs **Maximum Marks:70**

SECTION - A

Answer any **FOUR** questions. Each question carries equal marks**.** **(4*5 = 20)**

1. Write about disc plough and its salient features.
2. Write about the Valve working and draw Valve timing Diagram.
3. What is Tillage? Write about its Objectives and types.
4. Write about Chisel plough and its salient features.
5. Write about the structure of Sub soil plough with Diagram.
6. What is Puddler and write about Open blade type.
7. Write about the structure of Blade harrow with Diagram.

SECTION - B

Answer **all** the questions. Each question carries **TEN** marks. **(5*10=50)**

1. a) Define tillage and write an essay on different tillage implements.

(OR)

b) Give a brief account on methods of sowing.

2. a) Write about the components of Internal combustion engine with diagrams.

(OR)

b) What is four stroke engine and write about its working with Diagrams.

3. a) What are the components of Mould Board plough? Write about Share and its types

(OR)

b) What are the components of Disc Plough and Write about types of Disc plough

4. a) What are the components of Tractor drawn Disc harrow and write about its penetration.

(OR)

b) Write about the types of cultivators with Diagrams.

5. a) What is a Seed drill, write about its components and Elaborate the Fluted Feed seed metering mechanism.

(OR)

b) Write about the types of Potato planters and brief about Sugar cane Planter.

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
IV Year Semester – VII
POST HARVEST MANAGEMENT AND VALUE ADDITION OF FRUITS AND VEGETABLES(Major-elective)
(Credits:3+1=4)

UNIT I

The Importance of post-harvest technology of horticultural crops, Quality of post-harvest product, Pre harvest factors post-harvest factors affecting quality on post-harvest life of fruits and vegetables – factors responsible for deterioration of harvested fruits and vegetables.

UNIT II

Chemicals used in Ripening, importance of precooling, Methods for Precooling Produce pre storage treatments, low temperature storage, controlled atmosphere storage, hypobaric storage, irradiation and low-cost storage structures

UNIT III

Packaging Points Various types of packaging materials- Palletization- packaging technology for export. Fabrication of type of containers, cushioning material, vacuum packaging, poly shrink packaging, specific packaging for export of mango, banana, grapes, etc.

UNIT IV

Principles Of Food Preservation by Heat, Preservation by Low Temperature, Preservation by Chemicals, Preservation by fermentation. Precautions For Hygienic Conditions of The Unit, Sanitary Requirements of a Factory of Fruit Products, Preservation Through Canning, Bottling and Freezing- Methods of freezing, Preservation by Dehydration /Drying

UNIT V

Preparation Of Jams, Jellies, Marmalades, Preserves, Chutneys, Pickles, Ketchup, Sauce, Puree, Syrups, Juices, Squashes and Cordials

POST HARVEST MANAGEMENT OF FRUITS AND VEGETABLES (PRACTICAL)

1. Application of different types of packaging containers for shelf-life extension.
2. Effect of temperature on shelf life and quality of produce
3. Demonstration of chilling and freezing injury in fruits and vegetables
4. Extraction and preservation of pulps and juices
5. Preparation of Jam
6. Preparation of Jelly
7. Preparation of RTS and Nectar
8. Preparation of Squash and Syrup
9. Preparation of osmotically dried products
10. Preparation of fruit bar and candy

REFERENCES

- Sudheer, K.P. and V.Indira. 2007. Post-harvest technology of horticultural crops. New India Publishing Agency, Nw Delhi.
- Verma, L.R. and V.K. Joshi. 2000. Post-harvest technology of fruits and vegetables – Handling, Processing, Fermentation and Waste Management. Indus Publishing Company. New Delhi.
- Chadha, K.L. 2009. Handbook of Horticulture. IARI Publications, New Delhi.
- Thompson, A.K. 1996. Post harvest technology of fruits and vegetables. Blackwell Science Ltd. London.

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IV Year Semester – VII
POST HARVEST MANAGEMENT AND VALUE ADDITION OF FRUITS AND VEGETABLES(Major-elective)
(Credits:3+1=4)
MODEL QUESTION PAPER

Time: 3hrs **Maximum Marks:70**

SECTION-A

Answer any **FOUR** questions. Each question carries equal marks. **(4*5 = 20)**

1. Importance of post-harvest technology of horticultural crops
2. Write about chemicals used in ripening
3. Write the importance of precooling.
4. Write about atmospheric packaging.
5. Vacuum packaging.
6. Write about the principles of food preservation by heat.
7. What are the sanitary requirements of factory of fruit products.

SECTION - B

Answer **all** the questions. Each question carries **TEN** marks. **(5*10=50)**

1. a) What are the post-harvest and preharvest factors affecting quality post-harvest life of fruits and vegetables

(OR)

b) What are the factors responsible for the deterioration of the harvested fruits and vegetables

2. a) Write about different methods for pre cooling procedure.

(OR)

b) Types of packaging material.

3. a) Write about principles and process of canning.

(OR)

b) What are the methods of freezing.

4. a) Preparation of jellies and marmalade.

(OR)

b) Preparation of juices

5. a) Write the process of drying of fruits and state the advantages of dehydrated foods.

(OR)

b) What are the methods of drying.

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AGRICULTURE(Honours)
2025-26 Admitted Batch
IV Year Semester – VII
FARMING SYSTEMS AND SUSTAINABLE AGRICULTURE (Major-elective)
(CREDITS 3+1=4)

UNIT I

Sustainable agriculture – introduction – adverse effects of modern agriculture – definition – concept – goals – elements and current status of sustainable agriculture in India. Factors effecting ecological balance and sustainability of agricultural resources – introduction – land / soil related problems – soil degradation, deforestation, accelerated soil erosion.

UNIT II

Rise in water table – water logging – salinization and alkalization- control and reclamation measures Groundwater development scenario – over exploitation problems and safe yield concept – artificial recharge methods.

UNIT III

Environmental pollution – Introduction – greenhouse effect and potential effects on agriculture – depletion of ozone layer, methane emissions from rice fields and mitigation options- Fertilizers as a source of pollution and control measures – introduction – nitrate pollution in soil and ground water and eutrophication – management factors to reduce fertilizer pollution- Pesticides as source of pollution and control measures – bio pesticides.

UNIT IV

Impact on Low External Input Agriculture (ILEIA) and Low External Inputs for Sustainable Agriculture (LEISA) – vegetative cover.

Farming systems – system and systems approach – farming system – determinants of farming system – cropping systems and related terminology

UNIT V

Study of allied enterprises – significance of integrating crop and livestock – dairying and sheep and goat rearing – breeds – housing – feed and fodder requirements – biogas plant poultry farming – breeds – housing – feed and fodder requirements – apiculture – species and management- sericulture – moriculture and silkworm rearing – agro-forestry systems suitable for dryland farming

FARMING SYSTEMS AND SUSTAINABLE AGRICULTURE (PRACTICAL)

1. Preparation of cropping scheme to suit different irrigated and garden land situations
2. Preparation of farming systems to suit to dryland situation
3. Compost making
4. Vermicompost
5. Preparation of enriched farmyard manure
6. Recycling of urban waste
7. Use of bio-pesticides
8. Preparation of project proposals for land development
9. Management of problematic soils
10. Management practices to prevent environmental deterioration for sustainable agriculture

REFERENCES:

1. Arun, K. Sharma. 2006. A Hand Book of Organic Farming. Agrobios (India), Jodhpur. Dahama, A.K. 2007.
2. Organic Farming for Sustainable Agriculture. Agrobios (India), Jodhpur.
3. Dalela, R.C. and Mani, U.H. 1985. Assessment of Environmental Pollution. Academy of Environmental Biology, Muzaffarnagar.
4. Purohit, S.S. 2006. Trends in Organic Farming in India. Agrobios (India), Jodhpur.

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IV Year Semester – VII
FARMING SYSTEMS AND SUSTAINABLE AGRICULTURE (Major-elective)
(CREDITS 3+1=4)
MODEL QUESTION PAPER

Time: 3hrs **Maximum marks:70**

SECTION - A

Answer any **FOUR** questions. Each question carries equal marks. (4*5 = 20)

1. What are factors affecting the ecological balance and sustainable Agri-Resources
2. what are alkaline and soil soils and write about their reclamation
3. Write a short note on artificial recharge of groundwater
4. What are the potential effects of global warming?
5. Write a short note on methane emission of rice and how to mitigate?
6. What are the characters and advantages of biopesticides.
7. Write short note on Alley cropping.

SECTION - B

Answer **all** the questions. Each question carries **TEN** marks. (5*10=50)

1. a) Explain the goals and elements of sustainable agriculture.

(OR)

b) Explain multiple cropping and mixed cropping systems

2. a) Explain the soil related problems?

(OR)

b) What is eutrophication and explain effects and measures to reduce artificial eutrophication?

3. a) Explain the sustainable energy management in high input agriculture.

(OR)

b) Write in detail about bee keeping

4. a) What are the principles and objectives of farming system?

(OR)

b) Explain different Agro-forestry systems?

5. a) Write a short note on silkworm rearing and explain significance of integrated farming systems

(OR)

b) Write an essay on biogas plant

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2025-26 Admitted Batch
IV Year Semester – VIII

1	Principles of Plant Biotechnology	Major – core	3+1=4
2	Breeding of Field Crops	Major – core	3+1=4
3	Fundamentals of Rural Sociology and Extension Education	Major – core	3+1=4
4	Floriculture	Major – elective	3+1=4
5	Entrepreneurship Development	Major – elective	3+1=4
6		Open online transdisciplinary course	2+0=2
7		Indian Knowledge System-Audit course	-
		Total	**17+5=22**

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AGRICULTURE(Honours)
2025-26 Admitted Batch
IV Year Semester – VIII
PRINCIPLES OF PLANT BIOTECHNOLOGY(Major-core)
(CREDITS 3+1=4)

UNIT I

Biotechnology – definitions – major concepts and importance – biotechnology in India- History of plant tissue culture and plant genetic engineering and its terminology - Plant cell and tissue culture techniques – applications of plant tissue culture in crop improvement - Types of media – types of cultures.

UNIT II

Totipotency and morphogenesis – growth and differentiation in cultures – Micropropagation – meristem culture – procedure –Soma clonal variation – types – origin – applications – advantages – limitations – achievements - Embryo culture – purpose – methods of embryo culture – procedure – applications – achievements.

UNIT III

Somatic embryogenesis – stages of development – factors affecting somatic embryogenesis – applications – limitations - In vitro pollination and fertilization – somatic hybridization – procedure – isolation, culture, fusion of protoplasts, selection and culture of somatic hybrid cells and regeneration of hybrid plants – products of somatic hybridization – symmetric hybrids, asymmetric hybrids and cybrids – advantages and limitations of somatic hybridization.

UNIT IV

Genetic engineering – introduction - Method of cloning DNA in bacteria – Restriction enzymes – Vectors for gene transfer – properties of a good vector – cloning and expression vectors - Isolation of DNA fragments – Polymerase Chain Reaction (PCR) – comparison of PCR and gene cloning.

UNIT V

Genetic engineering for resistance to diseases caused by virus, fungi and bacteria.

PRINCIPLES OF PLANT BIOTECHNOLOGY (PRACTICALS):

1. Requirements for Plant Tissue Culture Laboratory
2. Techniques in Plant Tissue Culture
3. Media components and preparations
4. Sterilization techniques and Inoculation of various explants
5. Aseptic manipulation of various explants
6. Callus induction and Plant Regeneration
7. Micro propagation of important crops and hardening / acclimatization of regenerated plants
8. Anther, Embryo and Endosperm culture

REFERENCES:

- Bilgrami, K.S. and Pandey, A.K. 1992. Introduction to Biotechnology. CBS Pub., New Delhi. Chahal, G.S. and Gosal, S.S. 2002. Principles and Procedures of Plant Breeding –
- Biotechnological and Conventional Approaches. Narosa Publishing House, New Delhi.
- Chawla, H.S. 2005. Introduction to Plant Biotechnology. Oxford and IBH Publishing Co., New Delhi.
- Gupta, P.K. 1994 Elements of Biotechnology. Rastogi and Co., Educational Publishers, Meerut.
- Jha, T.B. and Ghosh, B. 2005. Plant Tissue Culture. University Press, Hyderabad.

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2025-26 Admitted Batch
IV Year Semester – VIII
PRINCIPLES OF PLANT BIOTECHNOLOGY(Major-core)
(CREDITS 3+1=4)
MODEL QUESTION PAPER

Time: 3hrs **Maximum Marks:70**

SECTION - A

Answer any **FOUR** questions. Each question carries equal marks. **(4*5 = 20)**

1. What are the major concepts and importance of biotechnology.
2. Explain types of media and types of cultures.
3. What is totipotency and morphogenesis.
4. Explain polymerase chain reaction.
5. Explain the properties of a good vector.
6. Write a short note on invitro pollination and fertilization.
7. Isolation of DNA fragments.

SECTION - B

Answer **all** the questions. Each question carries **TEN** marks. **(5*10=50)**

1. a) Write in detail about soma clonal variation.

(OR)

b) What is somatic embryogenesis and explain the stages of development and factors affecting it.

2. a) Explain the method of cloning DNA in bacteria and write a short note on restriction enzymes and vectors for gene transfer.

(OR)

b) Write an essay on transgenic plants, its applications in crop improvement and limitations.

3. a) Genetic engineering for resistance to diseases caused by virus, fungi and bacteria.

(OR)

b) Explain in detail about somatic hybridization.

4. a) Tissue culture techniques and its applications in crop improvement.

(OR)

b) What are symmetric hybrids, asymmetric hybrids and cybrids. State the advantages and limitations of somatic hybridization.

5. a) Explain embryo culture technique.

(OR)

b) Write an essay on micropropagation.

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2025-26 Admitted Batch
IV Year Semester – VIII
BREEDING OF FIELD CROPS (Major-core)
(CREDITS 3+1=4)

UNIT–I: Cereals

- Rice, Wheat, Maize, Sorghum Place of origin – putative parents – related wild species – classification – objectives of breeding- methods of breeding – quantity – quality – stress – conventional – innovative – heterosis breeding – distant hybridization and important varieties in following crops.

UNIT – II: Millets

- Pearl millet, Finger millet Place of origin – putative parents – related wild species – classification – objectives of breeding- methods of breeding – quantity – quality – stress – conventional – innovative – heterosis breeding – distant hybridization and important varieties in following crops.

UNIT–III: Pulses

- Red gram, Bengal gram, green gram, Black gram, Soybean Place of origin – putative parents – related wild species – classification – objectives of breeding- methods of breeding – quantity – quality – stress – conventional – innovative – heterosis breeding – distant hybridization and important varieties in following crops.

UNIT – IV: Oilseeds

- Groundnut, Sesame, Mustard, Sunflower and Safflower, Coconut Place of origin – putative parents – related wild species – classification – objectives of breeding- methods of breeding – quantity – quality – stress – conventional – innovative – heterosis breeding – distant hybridization and important varieties in following crops.

UNIT–V: Fibers and Sugars

- Cotton, Jute, Mesta, Sugarcane Place of origin – putative parents – related wild species – classification – objectives of breeding- methods of breeding – quantity – quality – stress – conventional – innovative – heterosis breeding – distant hybridization and important varieties in following crops.

BREEDING OF FIELD CROPS (PRACTICAL)

Observation on floral biology – anthesis and pollination – selfing and crossing techniques – observation on wild species – maintenance of crossing ledger – pedigree record – in following crops.

1. Rice, Wheat
2. Maize, Sorghum
3. Pearl Millet, Finger Millet
4. Red gram Bengal Gram, Green Gram, Black Gram, Soybean
5. Groundnut, Sesame, Mustard.
6. Sunflower, Safflower.
7. Coconut
8. Cotton, Jute and Mesta
9. Sugarcane

Reference

- Principles of Plant Breeding (1st & 2nd Edition) by RW Allard,
- Breeding Field Crops by JM Poehlman,
- Plant Breeding: Principles & Practices by JR Sharma,
- Genetics by Strickberger, and
- An introduction to genetic analysis by Suzuki et Al.

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2025-26 Admitted Batch
IV Year Semester – VIII
BREEDING OF FIELD CROPS(Major-core)
(Credits3+1=4)
MODEL QUESTION PAPER

Time: 3 Hours **Maximum Marks:70**

SECTION – A

Answer any **FOUR** questions. Each question carries equal marks. **(4*5 = 20)**

1. Draw the flowcharts for origin of Diploid, Tetraploid and Hexaploid Wheat.
2. Write about the latest classification of Sorghum given by Harlan and De Wet.
3. Write about the 3 basic type of crosses made in Hybridization of Sugar cane?
4. What are the main reasons for Low yields of Pulses compared to Cereals.
5. Write about the Progenetarors and desirable plant type in Chick pea.
6. Write about the types of cultivated species in Cotton.
7. Write about the classification of Cultivated Species of Rice?

SECTION - B

Answer **all** the questions. Each question carries **TEN** marks. **(5*10=50)**

1. a) Write about the breeding techniques for developing Hybrid Rice.

(OR)

b) Elucidate the Objectives of Plant Breeding.

2. a) Write about the Objectives for Breeding of Red Gram.

(OR)

b) Write about the classification of Ground Nut and why it is called as an unpredictable crop.

3. a) Explain Head to row and remnant seed method and Heterosis breeding in Sunflower.

(OR)

b) Write about the Taxonomy of Brassica crops and their economic characters.

4. a) Write elaborately about the Breeding procedures in Cotton.

(OR)

b) Write about the related wild species and improved varieties of red gram.

5. a) Write about the Breeding procedures for disease and abiotic stress resistance in Sugar cane.

(OR)

b) Write about the Breeding objectives of Soybean.

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2025-26 Admitted Batch
IV Year Semester – VIII
FUNDAMENTALS OF RURAL SOCIOLOGY AND EXTENSION EDUCATION
(Major core)
(CREDIT 3+1=4)

UNIT I

Sociology- Meaning, definition Rural Sociology- Meaning, definition, Scope, Importance of Rural sociology in agricultural extension and interrelationship between rural sociology and Agricultural Extension Indian Rural Society- Important characteristics, difference and relationship between rural and urban societies

UNIT II

Social groups- Meaning, definition, classification, Factors Considered In Formation And Organization of Groups, Motivation In Group Formation and Role of Social Groups In Agricultural Extension Social Stratification- Meaning, Definition, Functions, basis for stratification, Forms of social stratification, characteristics and difference between class and caste system Cultural Concepts- Culture, Customs, Folkways, Mores, taboos, Rituals and traditions- meaning, definition, and their role in Agricultural Extension

UNIT III

Social Values and Attitudes- Meaning, Definition, Types and Role of Social values and attitude in Agricultural Extension
Social Institutions- Meaning, Definition, Major institutions in rural society, marriage, family and religion, functions and their role in Agricultural Extension
Social Control- Meaning, Definition, need of social control in Agricultural Extension.
Social Change- Meaning, Definition, Nature of Social Change, Dimensions of Social Change, Types and their role in Agricultural Extension.

UNIT IV

Leader- Meaning, Definition, types and their role in Agricultural Extension.
Psychology and Educational psychology- Meaning, Definition, scope and importance of educational psychology in Agricultural Extension.
Behaviour: Cognitive, affective, psychomotor domain 05 Intelligence- Meaning, Definition, types factors affecting intelligence Personality- Meaning, Definition, types factors influencing personality

UNIT V

Teaching- Learning Process-Meaning and Definition of Teaching and learning, learning experience and learning situation, Elements of learning situation and its characteristics, principals of learning and their implication for teaching.
Perception: - Meaning, definition, role of perception in agricultural extension
Motivation: - Meaning, definition, role of motivation in agricultural extension

FUNDAMENTALS OF RURAL SOCIOLOGY AND EXTENSION EDUCATION (PRACTICALS):

1. Visit to a village to study the characteristics of rural society
2. Visit to village institutions - school or cooperative society or gram Panchayat
3. Visit to social organizations - youth club or milk cooperative center or Water Users Association.
4. Administering psychological tests by students to assess level of intelligence of human beings.
5. Administering psychological tests by students to assess the personality types of human beings.
6. Conducting role play technique by the students to exhibit different leadership styles.
7. Simulated exercises to exercise positive and negative emotions of farmers in village.
8. Simulated exercises to reveal the positive and negative emotions of the students in real life situation.

REFERENCES:

- Adivi Reddy, A. 2001. Extension Education. Sri Lakshmi Press, Bapatla.
- Chitamber, J.B. 1997. Introductory Rural Sociology. Wiley Eastern Limited, New Delhi.
- Daivadeenam, P. 2002. Educational Psychology in agriculture Agrotech Publishing Academy, Udaipur.
- Mangal, S.K. 2000. Educational Psychology. Prakash Brothers, Ludhiana.
- Ray, G.L. 2006. Extension Communication and Management. Naya Prakashan, Kolkata.

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IV Year Semester – VIII
FUNDAMENTALS OF RURAL SOCIOLOGY AND EXTENSION EDUCATION
(Major core)
(CREDIT 3+1=4)
MODEL QUESTION PAPER

Time: 3 Hours **Maximum Marks:70**

SECTION - A

Answer any **FOUR** questions. Each question carries equal marks. **(4*5 = 20)**

1. Importance of rural sociology in India. Scope of rural sociology in agricultural extension
2. Write a short note on social group and state characteristics of social group.
3. Difference between primary and social group.
4. Difference between mores and folkways.
5. Write short note on taboos and rituals.
6. Classification of family.
7. What is the role of social control in society.

SECTION - B

Answer **all** the questions. Each question carries **TEN** marks. **(5*10=50)**

1. a) Difference between rural and urban societies.

   (OR)

   b) Write about functions, characteristics and structure of culture.
2. a) Write about characteristics of Indian rural family

   (OR)

   b) What are the dimensions of social change ad explain the factors effecting social change
3. a) Explain the importance and role of education psychology in agricultural extension.

   (OR)

   b) What are the factors effecting intelligence and importance of intelligence in agricultural extension.
4. a) Difference between extrovert and introvert personality

   (OR)

   b) Classification of leaders.
5. a) What are different principles of learning

   (OR)

   b) Factors affecting personality and Role of personality in agricultural extension.

ANDHRA UNIVERSITY
B. Vocational Course
AGRICULTURE(Honours)
2025-26 Admitted Batch
IV Year Semester – VIII
FLORICULTURE (Major elective)
(CREDITS 3+1=4)

UNIT I

Floriculture – definition – History of floriculture in India - Scope and importance of floriculture crops; Industrial importance of Ornamental plants & Commercial flowers in India and abroad - Role of ornamentals in pollution control - Classification of flower crops.

UNIT II

Ornamental gardening - features of ornamental gardening - Planning of ornamental gardens – principles involved in layout of gardens - Types and styles of ornamental gardens.

UNIT III

Production technology of flower crops under protected and open cultivation of Rose, Gerbera, Gladiolus, Tuberose.

UNIT IV

Production technology of flower crops under protected and open cultivation of Jasmine, Chrysanthemum, Marigold.

UNIT V

Cut flower production and post-harvest handling of cut flowers - new generation cut flowers - Dry flower production – A profitable floriculture business.

FLORICULTURE (PRACTICALS)

1. Identification of commercially important flower crops and their varieties.
2. Tools and equipment used in plant propagation techniques
3. Propagation techniques for flower crops production.
4. Training and pruning, drip and fertigation, foliar nutrition.
5. Growth regulator application, pinching, disbudding, staking.
6. Harvesting techniques, postharvest handling of cut flowers.
7. Project preparation for regionally important cut flowers.
8. Visit to commercial cut flower units and case study.

REFERENCES:

- Arora, JS. 2006. Introductory Ornamental Horticultural. Kalyani.
- Bhattacharjee, SK. 2006. Advances in Ornamental Horticulture. Vols. I-VI. Pointer Publ.
- Bose, TK. Maiti RG, Dhua RS & Das P. 1999. Floriculture and Landscaping. Naya prokash.
- Reddy, S. Janakiram, B. Balaji, T. Kulkarni, S & Misra, RL. 2007. High-techFloriculture. 5.Indian Society of ornamental Horticulture, New Delhi.
- Complete book of roses by Bhattarcharjee, S. K. & Banerjee, B. K. (2010) published by Aniskar Publisher, Jaipur.

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MODEL QUESTION PAPER

Time: 3hrs **Maximum Marks:70**

SECTION - A

Answer any **FOUR** questions. Each question carries equal marks. **(4*5 =20)**

1. What is the scop and importance of floriculture?
2. Write the role of ornamental crops in pollution control
3. Write a short note on press drying of flowers
4. explain the physiological changes during flower senescence?
5. what are the factors effecting storage life of flowers what are the conditions and precooling of cut flowers?
6. what are the importance of post-harvest handling of flowers?
7. What are the uses of marigold?

SECTION - B

Answer **all** the questions. Each question carries **TEN** marks. **(5*10=50)**

1. a) Explain the classification of flowers.

(OR)

b) Write the production technology of rose

2. a) Explain the different methods of storage of cut flowers?

(OR)

b) Write the advantages and uses of dry flowers?

3. a) What are the different embedding material used for flower drying and their characteristics

(OR)

b) I. Description of commercial cultivars of tuberose

II. Write about lifting curing and storage of bulbs in tuberose

4. a) Explain the procedure for extraction of jasmine concrete

(OR)

b) What are the propagating materials of gladiolus and explain the harvesting and storage of corms in gladiolus?

5. a) Write in detail about classification of chrysanthemum

(OR)

b) What are the objectives and types of pruning in roses

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IV Year Semester – VIII
ENTREPRENEURSHIP DEVELOPMENT (Major elective)
(CREDITS 3+1=4)

UNIT I

Concept of entrepreneur, entrepreneurship, functions of entrepreneur, Entrepreneurial characteristics, Distinction between an entrepreneur and a manager, Agri-entrepreneurship- concept, need and scope, Assessing overall business environment in Indian economy, globalization, implications of social, political and economic systems on entrepreneurship.

UNIT II

Entrepreneurship development programmes (EDPs) - objectives, phases, problems of EDPs, Criteria for assessment or evaluation of EDPs, Generation, incubation and commercialization of business ideas, Role of entrepreneurship in economic development, Motivation and entrepreneurship development, managing an enterprise, Importance of planning, budgeting, monitoring, evaluation and follow up in running an enterprise.

UNIT III

Researching / managing competition- ways to define possible competitors, competitive information, SWOT analysis-concept, meaning and advantages, Forms of business-contract farming, joint venture and public private partnership.

UNIT IV

An overview of agricultural input industry in India; fertilizer, pesticide, seed and farm machinery industry, Overview of Indian agricultural processing industry, social responsibility and business ethics.

UNIT V

Project- meaning, importance, components &preparation, Supply chain management- meaning, advantages, stages, process, drivers and scope of Agri-supply chain management, Women entrepreneurship-concept, problems and development of women entrepreneurs.

ENTREPRENEURSHIP DEVELOPMENT (PRACTICALS)

1. Communication skills - listening and note taking - simulated exercises.
2. Communication skills - writing skills - simulated exercises.
3. Communication skills - presentation - oral impromptu and public speaking - simulated exercise Communication skills - reading and comprehension - simulated exercises.
4. Visit to a public private enterprise.
5. Visit to. Agri clinics and agribusiness centers.
6. SWOT analysis of selected enterprise.

7. Development of project proposals - idea generation.
8. Development of project proposals - SWOT analysis.
9. Development of project proposals - formulation of project plan.
10. Development of project proposals - formulation of project plan.
11. Presentation of project reports by the students.

REFERENCES:

- Anils Kumar, S., Poornima, S.C., Mini, K., Abraham and Jayashree, K. 2003. Entrepreneurship Development, New Age International Publishers, New Delhi.
- Gupta, C.B. 2001. Management. Theory and Practice. Sultan Chand and Sons, New Delhi.
- Indu Grover. 2008. Handbook on Empowerment and Entrepreneurship. Agrotech Public Academy, Udaipur.
- Mary Coulter. 2008. Entrepreneurship in Action. Prentice Hall of India Pvt. Ltd., New Delhi.
- Mohanty, S.K. 2009. Fundamentals of Entrepreneurship. Prentice Hall of India Pvt. Ltd., New Delhi.

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2025-26 Admitted Batch
IV Year Semester – VIII
ENTREPRENEURSHIP DEVELOPMENT (Major elective)
(Credits 3+1=4)
MODEL QUESTION PAPER

Time: 3hrs **Maximum Marks:70**

SECTION - A

Answer any **FOUR** questions. Each question carries equal marks. **(4*5 = 20)**

1. Difference between entrepreneur and manager
2. What is the need of and scope of Agri-preneurship?
3. What are the objectives of entrepreneur development program.
4. Explain the process of commercialization?
5. How you will manage an enterprise?
6. What is the purpose and importance of budgeting.
7. Write the merits and problems faced by the farmers in contract farming.

SECTION - B

Answer all the questions. Each question carries **TEN** marks. **(5*10=50)**

1. a) Explain the types of entrepreneurs.

(OR)

b) What are the functions of entrepreneurs?

2. a) What are the different ways to generate ideas?

(OR)

b) Explain the characteristics of entrepreneurs?

3. a) Write in detail about SWOT analysis.

(OR)

b) Explain the characters of food processing industry.

4. a) What are the social responsibilities?

(OR)

b) What are the problems of women entrepreneurs?

5. a) What is contract farming? Explain the types of contract farming.

(OR)

b) What are the drivers of supply chain performance write about the scope of Agri supply chain management?

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IV Year Semester – VIII
OPEN ONLINE TRANSDISCIPLINARY COURSE
(CREDITS 2+0=2)

ANDHRA UNIVERSITY
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AGRICULTURE(Honours)
2025-26 Admitted Batch
IV Year Semester – VIII
INDIAN KNOWLEDGE SYSTEM -AUDIT COURSE