1ST YEAR	I SEM	1.	**English** (language)	3+0=3
		2.	**Telugu** (language)	3+0=3
		3.	**Human Values and Professional Ethics** (Skill development)	2+0=2
		4.	**Plant Nursery** (Skill development)	2+0=2
		5.	**Introduction to Agronomy** (Core subject)	4+2=6
		6.	**Introduction to Soil science** (Core subject)	4+2=6
		7.	**Fundamentals of Genetics** (Core subject)	4+2=6
Total Credits= 22+6=28				

ANDHRA UNIVERSITY
B. Vocational course
AGRICULTURE
2020-21 Admitted Batch
I Year – Semester I
English - 1
(CREDITS 3+0=3)

Leaning outcome:

- Use grammar effectively in writing andspeaking.
- Demonstrate the use of goodvocabulary
- Demonstrate an understating of writingskills
- Acquire ability to use Soft Skills in professional and dailylife.
- Confidently use the tools of communication skills

UNIT-I- Listening Skills- Importance of Listening, Types of Listening, Barriers to Listening Effective Listening

UNIT-II- Speaking Skills- Sounds of English: Vowels and Consonants, Word Accent, **Intonation**

UNIT-III- Grammar-Concord, Modals, Tenses (Present/Past/Future), Articles, Prepositions, QuestionTags,SentenceTransformation(Voice,ReportedSpeech&DegreesofComparison),Error Correction

UNIT-IV- Writing- Punctuation, Spelling, Paragraph Writing

UNIT-V- Soft Skills- SWOC, Attitude, Emotional Intelligence, Telephone Etiquette, Interpersonal Skills

ANDHRA UNIVERSITY
B. Vocational course
AGRICULTURE
2020-21 Admitted Batch
I Year – Semester I
ENGLISH - 1
MODEL QUESTION PAPER

Max. Marks: 75 Time: 3 hrs

UNIT-I

1.Answer any three of the following questions (3*5=15)
a. b. c. d. e.

UNIT-II

2. Read the following transcriptions and write the spelling (5*1=5)
a. b. c. d. e.
3. Mark the STRESS of the following words (3*1=3)
a. b. c.
4. mark and name the TONE of the following words (2*1=2)
a. b.

UNIT-III

5. Use appropriate MODELS in the following sentences (2*1=2)
a. b.
6. fill in the blanks with suitable verb forms (5*1=5)
a. b. c. d. e.
7. fill in the blanks with suitable ARTICLES (2*1=2)
a. b.
8. fill in the blanks with suitable PREPOSITIONS (2*1=2)
a. b.
9. rewrite the sentences as directed (9*1=9)
a. b. c. d. e. f. g. h. i.
10. rewrite the following sentences correcting the underlined part (5*1=5)
a. b. c. d. e.

UNIT-IV

11. Punctuate the following lines (1*3=3)
12. write correct spelling for the following words (4*0.5=2)
a. b. c. d.
13. write a paragraph on any one of the following topics (1*5=5)
a. b.

UNIT-V

14. Answer any three of the following questions (3*5=15)
a. b. c. d. e.

ANDHRA UNIVERSITY
B. Vocational course
AGRICULTURE
2020-21 Admitted Batch
I Year – Semester I
TELUGU
(CREDITS 3+0=3)

అంశం: జనరల్ తెలుగు సెమిస్టర్-1

కోర్సు-1 : ప్రాచీన తెలుగు కవిత్వం

యూనిట్ల సంఖ్య: 5 పీరియడ్ల సంఖ్య: 60

✦ **అభ్యసన ఫలితాలు:-**

ఈ కోర్సు విజయవంతంగా ముగించాక, విద్యార్థులు క్రింది అభ్యసన ఫలితాలను పొందగలరు.

1. ప్రాచీన తెలుగుసాహిత్యం యొక్క ప్రాచీనతను, విశిష్టతను గుర్తిస్తారు. తెలుగుసాహిత్యంలో ఆదికవి నన్నయ కాలంనాటి భాషాసంస్కృతులను, ఇతిహాసకాలం నాటి రాజనీతి విషయాలపట్ల పరిజ్ఞానాన్ని సంపాదించగలరు.

2. శివకవుల కాలంనాటి మతపరిస్థితులను, భాషావిశేషాలను గ్రహిస్తారు. తెలుగు నుడికారం, సామెతలు, లోకోక్తులు మొదలైన భాషాంశాల పట్ల పరిజ్ఞానాన్ని పొందగలరు.

3. తిక్కన భారతంనాటి మత, ధార్మిక పరిస్థితులను, తిక్కన కవితాశిల్పాన్ని, నాటకీయతను అవగాహన చేసుకోగలరు.

4. ఎఱ్ఱన సూక్తివైచిత్రిని, ఇతిహాస కవిత్వంలోని విభిన్న రీతులపట్ల అభిరుచిని పొందగలరు. శ్రీనాథుని కాలం నాటి కవితావిశేషాలను, మొల్ల కవితా విశిష్టతను గుర్తించగలరు.

5. తెలుగు పద్యం స్వరూప-స్వభావాలను, సాహిత్యాభిరుచిని పెంపొందించుకుంటారు. ప్రాచీన కావ్యభాషలోని వ్యాకరణాంశాలను అధ్యయనం చేయడం ద్వారా భాషాసామర్థ్యాన్ని, రచనల మెళకువలను గ్రహించగలరు.

పాఠ్య ప్రణాళిక

యూనిట్-I

రాజనీతి - నన్నయ

మహాభారతం-సభాపర్వం-ప్రథమాశ్వాసం-(26-57 పద్యాలు)

యూనిట్-II

దక్షయజ్ఞం - నన్నెచోడుడు

కుమారసంభవం-ద్వితీయాశ్వాసం-(49-86 పద్యాలు)

యూనిట్-III

ధౌమ్య ధర్మోపదేశము - తిక్కన

మహాభారతం-విరాటపర్వం-ప్రథమాశ్వాసం-(116-146) పద్యాలు

యూనిట్-IV

పలనాటి బెబ్బులి - శ్రీనాథుడు (పలనాటి వీరచరిత్ర-ద్విపద కావ్యం పుట 108-112
'బాలచంద్రుడు భీమంబగు సంగ్రామం బొనర్చుట.. (108)..
..... వెఱగంది కుంది' (112) సం. అక్కిరాజు ఉమాకాంతం
ముద్రణ.వి.కె.స్వామి, బెజవాడ 1911.

యూనిట్-V

సీతారావణ సంవాదం - మొల్ల

రామాయణము-సుందరకాండము-(40-87 పద్యాలు)

✦**వ్యాకరణం**

సంధులు: ఉత్వ, త్రిక, ద్రుతప్రకృతిక, నుగాగమ,ద్విరుక్తటకారాదేశ, యణాదేశ, వృద్ధి, శ్చుత్వ, జశ్త్వ, అనునాసిక సంధులు.

సమాసాలు: అవ్యయీభావ, తత్పురుష, కర్మధారయ, ద్వంద్వ, ద్విగు, బహువ్రీహి.

అలంకారాలుః

అర్థాలంకారాలు ః ఉపమ, ఉత్ప్రేక్ష, రూపక, స్వభావోక్తి, అర్థాంతరవ్యాస, అతిశయోక్తి.

శబ్దాలంకారాలు ః అనుప్రాస (వృత్యనుప్రాస, ఛేకానుప్రాస లాటానుప్రాస, అంత్యానుప్రాస)

ఛందస్సు

వృత్తాలు: ఉత్పలమాల, చంపకమాల, శార్దూలము, మత్తేభము;

జాతులు : కందం, ద్విపద; ఉపజాతులు : ఆటవెలది, తేటగీతి, సీసం మరియు ముత్యాలసరాలు

ఆధార గ్రంథాలు:

1. శ్రీమదాంధ్ర మహాభారతము : సభాపర్వము-తిరుమల తిరుపతి దేవస్థానం ప్రచురణ
2. శ్రీమదాంధ్ర మహాభారతము : విరాటపర్వము-తిరుమల తిరుపతి దేవస్థానం ప్రచురణ
3. కుమార సంభవం – నన్నెచోడుడు
4. పలనాటి వీరచరిత్ర – శ్రీనాథుడు
5. రామాయణము – మొల్ల

✦ **సూచించబడిన సహపాఠ్య కార్యక్రమాలు:**

1. నన్నయ్య, తిక్కన, ఎఱ్ఱన మొదలైన ప్రసిద్ధ కవుల పాఠ్యాంశేతర పద్యాలను ఇచ్చి, విద్యార్థులచేత సమీక్షలు రాయించడం; ఆయా పద్యాల్లోని యతిప్రాసాది ఛందోవిశేషాలను గుర్తింపజేయడం.
2. విద్యార్థులచేత పాఠ్యాంశాలకు సంబంధించిన వ్యాసాలు రాయించడం (సెమినార్/అసైన్‌మెంట్)
3. ప్రాచీన పాఠ్యాంశాలలోని సమకాలీనతను గూర్చిన బృంద చర్చ, ప్రాచీన సాహిత్యాన్ని నేటి సామాజిక దృష్టితో పునర్మూల్యాంకనం చేయించడం.
4. చారిత్రిక, సాంస్కృతిక అంశాలకు సంబంధించిన పర్యాటక ప్రదేశాలను సందర్శించడం.
5. వ్యక్తిగత/బృంద ప్రాజెక్టులు చేయించడం. ప్రశ్నాపత్ర నిర్మాతలకు సూచనలు ప్రతిపదార్థ పద్యాలు, కంఠస్థ పద్యాలు "రాజనీతి, దక్షయజ్ఞం, ధౌమ్య ధర్మోపదేశం, సీతారావణ సంవాదం" అనే నాలుగు పాఠ్యాంశాల నుండి మాత్రమే ఇవ్వాలి.

ప్రశ్నాపత్ర నమూనా

అ. ప్రతిపదార్థ పద్యాలు-(అంతర్గత ఛాయిస్)	(2-1)	1×8=8 మా
ఆ. కంఠస్థ పద్యం-(అంతర్గత ఛాయిస్)	(2-1)	1×3=3 మా
ఇ. సందర్భ వాక్యాలు-	(6-4)	4×3=12 మా
ఈ. సంగ్రహ సమాధాన ప్రశ్నలు	(6-4)	4×3=12 మా
ఉ. వ్యాస ప్రశ్నలు (అంతర్గత ఛాయిస్)	(6-3)	3×8=24 మా
ఊ. వ్యాకరణం-సంధులు	(6-4)	4×1=4 మా
సమాసాలు	(6-4)	4×1=4 మా
అలంకారాలు	(2-1)	1×4=4 మా
ఛందస్సు	(2-1)	1×4=4 మా

ANDHRA UNIVERSITY
B. Vocational course
AGRICULTURE
2020-21 Admitted Batch
I Year – Semester I

HUMAN VALUES AND PROFESSIONAL ETHICS

(CREDITS 2+0=2)

Learning Outcome:

On completion of this course, the UG students will be able to

- Understand the significance of value inputs in a classroom and start applying them in their life andprofession
- Distinguish between values and skills, happiness and accumulation of physical facilities, the self and the Body, Intention and Competence of an individual,etc.
- Understand the value of harmonious relationship based on trust and respect in their life and profession
- Understand the role of a human being in ensuring harmony in society andnature.
- Distinguish between ethical and unethical practices, and start working out the strategy toactualize a harmonious environment wherever theywork.

UNIT-I

Introduction – Definition, Importance, Process & Classifications of Value Education.
Understanding the need, basic guidelines, content and process for Value Education
Understanding the thought provoking issues; need for Values in our daily life
Choices making – Choosing, Cherishing & Acting
Classification of Value Education: understanding Personal Values, Social Values, Moral Values & Spiritual Values.

UNIT-II

Harmony in the Family – Understanding Values in Human Relationships
Understanding harmony in the Family- the basic unit of human interaction
Understanding the set of proposals to verify the Harmony in the Family;
Trust (*Vishwas*) and Respect (*Samman*) as the foundational values of relationship
PresentScenario:Differentiation(Disrespect)inrelationshipsonthebasisofbody,physicalfacilities, orbeliefs.
Understanding the Problems faced due to differentiation in Relationships
Understanding the harmony in the society (society being an extension of family): *Samadhan*, *Samridhi*, *Abhay*, *Sah-astitva*as comprehensive HumanGoals
Visualizing a universal harmonious order in society- Undivided Society (*AkhandSamaj*), Universal Order (*SarvabhaumVyawastha*)- from family to worldfamily.

UNIT-III

Professional Ethics in Education
Understanding about Professional Integrity, Respect & Equality, Privacy, Building Trusting Relationships.
Understanding the concepts; Positive co-operation, Respecting the competence of other professions.
Understanding about Taking initiative and Promoting the culture of openness.
Depicting Loyalty towards Goals and objectives.

Text Books:

- R R Gaur, R Sangal, G P Bagaria, 2009, A Foundation Course in Human Values and ProfessionalEthics.
- Bhatia, R. & Bhatia, A (2015) Role of Ethical Values in Indian HigherEducation.

References:

1. Ivan Illich, 1974, Energy & Equity, The Trinity Press, Worcester, and HarperCollins,
2. U E.F. Schumacher, 1973, Small is Beautiful: a study of economics as if people mattered, Blond & Briggs,Britain.
3. Sussan George, 1976, How the Other Half Dies, Penguin Press. Reprinted 1986,1991
4. Donella H. Meadows, Dennis L. Meadows, Jorgen Randers, William W. Behrens III, 1972, Limits to Growth – Club of Rome's report, UniverseBooks.
5. A Nagraj, 1998, Jeevan Vidya EkParichay, Divya Path Sansthan,Amarkantak.
6. P L Dhar, RR Gaur, 1990, Science and Humanism, CommonwealthPublishers.
7. A N Tripathy, 2003, Human Values, New Age InternationalPublishers.

Mode of Evaluation:

Assignment/ Seminar/Continuous Assessment Test/Semester End Exam.

Co-curricular Activities:

1. Visit to an Old Age Home and spending with the inmates for aday.
2. Conduct of Group Discussions on the topics related to thesyllabus.
3. Participation in community serviceactivities.
4. Working with a NGO like Rotary Club or Lions International,etc.

ANDHRA UNIVERSITY
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2020-21 Admitted Batch
I Year – Semester I
HUMAN VALUES AND PROFESSIONAL ETHICS
MODEL QUESTION PAPER

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

SECTION-A (4x5M=20Marks)

Answer any four questions. Each answer carries 5 marks
(At least 1 question should be given from each Unit)

1. Define respect
2. What do you understand by professional integrity?
3. What do you mean by prosperity?
4. Define trust
5. Write about social values
6. Explain the concept of universal order
7. What to you understand by positive cooperation?
8. Explain briefly about loyalty towards goals and objectives

SECTION-B (3x10M = 30Marks)

Answer all questions. Each answer carries 10 marks (At

least 1 question should be given from each Unit)

9. (A)Define value education and discuss its significance
   OR
   (B)Write about the set of proposals to verify the harmony in the family.

10. (A)Write about the promoting the culture of openness
    OR
    (B)Eloborate on the problems faced due to differentiation in relationships

11. (A)Discuss how the values help us in making choices in our daily lives
    OR
    (B)Explain the importance of harmony in the society

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ANDHRA UNIVERSITY
B. Vocational course
AGRICULTURE
2020-21 Admitted Batch
I Year – Semester I
PLANT NURSERY
(CREDITS 2+0=2)

Learning Outcomes :

On successful completion of this course students will be able to;

- Understand the importance of a plant nursery and basic infrastructure to establishit.
- Explain the basic material, tools and techniques required fornursery.
- Demonstrate expertise related to various practices in anursery.
- Comprehend knowledge and skills to get an employment or to become anentrepreneur in plant nurserysector.

UNIT-I

Introduction to plant nursery

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

UNIT- II

Necessities for nursery

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

UNIT-III

Management of nursery

Seasonal activities and routine operations in a nursery.
Nursery management – watering, weeding and nutrients; pests anddiseases.
Common possible errors in nurseryactivities.
Economics of nursery development, pricing and recordmaintenance.
Online nursery information and salessystems**.**

Suggested Co-curricular activities

- Assignments/Group discussion/Quiz/ModelExam.
- Demonstration of nursery bedmaking.
- Demonstration of preparation of media fornursery.
- Hands on training on vegetative propagationtechniques.
- Hands on training on sowing methods of seeds and othermaterial.
- Invited lecture cum demonstration by localexpert**.**
- Watching videos on routine practices in plantnurseries.
- Visit to an agriculture/horticulture /forestnursery.
- Case study on establishment and success of a plantnursery.

Suggested text books/reference books :

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

ANDHRA UNIVERSITY
B. Vocational course
AGRICULTURE
2020-21 Admitted Batch
I Year – Semester I
PLANT NURSERY
MODEL QUESTION PAPER

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

SECTION-A (4x5M=20Marks)

Answer any four questions. Each answer carries 5 marks
(At least 1 question should be given from each Unit)

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 (3x10M = 30Marks)

Answer any three questions. Each answer carries 10 marks(At least 1 question should be given from each Unit)

9. Give a detailed account of the different types of nurseries
10. Give an account of the layout and the components of a good nursery
11. Write an account of the bureau of Indian standards (BIS-2008) related to a nursery
12. Describe the vegetative materials to raise nursery
13. Give a detailed account of the nursery management

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ANDHRA UNIVERSITY

B. Vocational course

AGRICULTURE

2020-21 Admitted Batch

I Year Semester –I

INTRODUCTION TO AGRONOMY(CREDITS4+2=6)

UNIT- I- Importance and scope Agriculture – Definition- Branches of agriculture- History of agricultural development in the World and India.

UNIT–II-Agroclimaticzones-Agronomy-Definition-Importance-MeaningandscopeAgro-climatic zones of Andhra Pradesh & India-Crops and their classification- Factors affecting cropproduction

UNIT – III- Tillage- Types - Objectives - Modern concepts of tillage-Crop establishment methods

UNIT – IV- Manures and fertilizers- Irrigation management -Fertilizer application

UNIT – V- Cropping patterns and cropping systems-Weed management- Sustainableagriculture-Integrated farming systems- Organicagriculture

Reference Books

1. Reddy , S R and Reddi Ramu 5th edition 2016, -kalyani publishers,Ludhiana.

INTRODUCTION TO AGRONOMY (PRACTICAL)

1. Visit to college farm & study of farm features andmeasurements
2. Identification of crops andseeds
3. Study of seed treatmentpractices
4. Study of tillage implements- practicing ploughing, puddlingoperations.
5. Calculation of the seed rate and fertilizedrequirements.
6. Different methods of seeds sowing and planting.
7. Methods of inter – cultivationimplements
8. Fertilizer applications and participation in fieldoperations

ANDHRA UNIVERSITY
B. Vocational course
AGRICULTURE
2020-21 Admitted Batch
I Year Semester – I
INTRODUCTION TO
AGRONOMYMODEL QUESTION PAPER

Time:3Hours Maximum: 75Marks

SECTION – A

Answer any **FIVE** questions. Each question carriesequalmarks. (5*5 = 25)

1. Define Agronomy? Discuss about its scope & importancebriefly.
2. Write a note on Agro Climatic Zones of Andhra Pradesh.
3. What do you mean by sustainable Agriculture? Mention the Features of SustainableAgriculture.
4. Write a note on tillage and list out the importance oftillage.
5. Discuss about zero tillage and Stubble nucleartillage.
6. Differentiate between manners andfertilizers.
7. What do you mean by Cropping system and Croppingpattern.
8. What is a Crop? Classify the crops.

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 OrganicFarming.

2. a) What do you mean by fertilizers? Write a note on methods of fertilizerapplication.

(OR)

b) Future Scope of OrganicAgriculture.

3. a) What is a Weed? Describe the methods of Weedcontrol.

(OR)

b) What do you mean by manners? List out the most Familiarmanners.

4. a) Write a detailed note on modern concepts oftillage.

(OR)

b) Write an essay on Crop establishmentmethods.

5. a) What is irrigation? List out the methods or types ofirrigation.

(OR)

b) Mention the objectives and importance of tillage.

ANDHRA UNIVERSITY
B. Vocational course
AGRICULTURE
2020-21 Admitted Batch
I Year Semester –I
INTRODUCTION TO SOIL SCIENCE(CREDITS4+2=6)

UNIT – I- Introduction

Definition of soil, Soil as a Natural Body

UNIT – II- Soil Components

Soil air, Soil water, Organic and inorganic solids

UNIT – III- Physical Properties:

Soil separates, texture, Aggregation and Structural Characters, Temperature, Colour, PropertiesofSoilMixture,PoreSpace,BulkDensity,ParticleDensity,Aeration,Drainage, compaction, Surface area, Soil waterrelations.

UNIT - IV. 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 – V- Genesis and Classification

Profile, Soil forming factors, Soil Survey methods, Soil survey Reports, Soil distribution, Classification of Systems, Drainage, Erosion: Mechanisms and Control.

References

1. Indian Society of Soil Science.2012. Fundamentals of Soil Science. IARI, NewDelhi.
2. Yawalkar K.S, Agarwal, T.P and Bokde, S 1995. Manures and Fertilisers. Agril. Publishing House,Nagpur
3. 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.
4. D. K .Das 2014. Introductory Soil Science. Kalyani Publishers, NewDelhi

INTRODUCTION TO SOIL SCIENCE (PRACTICAL)

1. Soil sampling procedures for field and horticulturalcrops
2. Determination ofEC.
3 Determination of PH of soil.
4. Land use, texture bulk density, Definition of Soil Physicalproperties.
5. Determination of N, P and K of thesoil
6. Determination ofSulphur.
7. Fertilizerrecommendations.
8. Soil health card, parameters, EC, PH and theirImportance

ANDHRA UNIVERSITY
B. Vocational course
AGRICULTURE
2020-21 Admitted Batch
I Year Semester – I
INTRODUCTION TO SOIL SCIENCEMODEL QUESTION PAPER

Time:3Hours Maximum: 75Marks

SECTION – A

Answer any **FIVE** questions. Each question carriesequalmarks. (5*5 = 25)

1. Define Soil? Why it is called OS naturalbody?
2. Discuss about the profile of theSoil.
3. What do you mean by soil texture and soilstructure?
4. Write a note on soil Air and Soil water.
5. What do you mean by soil colour? What was the impact of soil colour on cropgrowth.
6. Define Soil Science and mention the importance of soil scienceknowledge.
7. What is Soil survey and dismiss about soil surveyreports.
8. Write a note on classification ofsoil.

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 ofit.

(OR)

b) What is drainage? Write its types.

2. a) Write a detailed note on soilrelations.

(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 ofsoil.

(OR)

b) Write about the chemistry of soil? Discuss about bulk and practical density.

4. a) Write a note on Porosity ofsoil.

(OR)

b) Discuss about nitrogen transformation in detailed manner.

5. a) Scope and importance of soil sciences and how it helps for futureagriculture.

(OR)

b) Write a note on sulphurtransformation.

ANDHRA UNIVERSITY
B. Vocational course
AGRICULTURE
2020-21 Admitted Batch
I Year Semester – I

FUNDAMENTALS OF GENETICS

(CREDITS 4+2=6)

UNIT – I

- 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 - II

- Gene expression and differential gene activation – Operon concept – Lac Operon
- Meiosis – definition – process – differences between mitosis and meiosis – significance in plant breeding
- Arrangement of genes on chromosomes – linkage – definition – linkage groups
- coupling phase and repulsion phase – types of linkage – distinction between linkage and pleiotropism
- Crossing over – mechanism of crossing over – types of crossing over – factors affecting crossing over – crossing over at four strand stage – cytological proof of crossing over in *Drosophila* – significance of crossing over in plant breeding – coincidence –interference

UNIT - III

- 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
- Gene action – types of gene action – pleiotropism – alleles – characteristic features of alleles – multiple alleles (blood groups in human beings, fur / coat colour in rabbits and self-incompatibility alleles in plants) – characteristic features of multiple alleles –pseudo-alleles – penetrance (complete penetrance and incomplete penetrance) and expressivity (uniform expressivity and variable expressivity)

UNIT - IV

- Cytoplasmic inheritance – definition – chloroplast inheritance (leaf variegation in *Mirabilis jalapa* and iojap in maize) – mitochondrial inheritance (cytoplasmic male sterility in maize and pokyness in neurospora) – characteristic features
- of cytoplasmic inheritance – differences between chromosomal and extrachromosomal inheritance
- Gene mutations – introduction – definition – brief history – terminology – classification of mutations – characteristic features of mutations – spontaneous mutations and induced mutations
- Gene mutations – artificial induction of mutations – physical and chemical mutagens –

molecular basis of mutations – detection of sex linked lethals in *Drosophila* by CLB technique – detection of mutations in plants – importance of mutation in plant breeding programmes – chimeras – xenia and metaxenia

- Structural chromosomal aberrations – breakage-fusion-bridge cycle – deletions (deficiencies), duplications and their significance in plantbreeding

UNIT - V

- Numerical chromosomal aberrations – terminology – classification – euploidy and aneuploidy – kinds of polyploids – autopolyploids, 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 – cytological behaviour and their significance in plant breeding
- Numerical chromosomal aberrations – polyploidy and evolution of crop species – wheat, cotton, tobacco, *Triticale*, *Brassica* etc.
- Numerical chromosomal aberrations – aneuploidy – types of aneuploids – monosomics, double monosomics, nullisomics, double nullisomics, trisomics (primary, secondary and tertiary trisomics) and tetrasomics – their cytological behaviour and significance in plant breeding – effects ofpolyploidy
- Genomic approaches in agriculture – definitions of genomics, structural genomics and functional genomics – Human Genome Project – genome size – briefoutline

References

1. Gupta,P.K.1985.*Cytology,GeneticsandCytogenetics*.RastogiPublications,Meerut.Gupta,P.K. 2007. *Genetics*. Rastogi Publications,Meerut.
2. Pundhan Singh, 2000. *Elements of Genetics*. Kalyani Publishers,Ludhiana.
3. Singh, B.D. 2007. *Fundamentals of Genetics*. Kalyani Publishers,Ludhiana.
4. Strickberger, M.W. 2004. *Genetics*. Prentice – Hall of India Pvt. Ltd., NewDelhi.
5. Verma, P.S. and Agarwal, V.K. 2005. *Cell Biology, Genetics, Molecular Biology, Evolution and Ecology*. S. Chand and Co., NewDelhi.

FUNDAMENTALS OF GENETICS (PRACTICAL)

1. Study ofmicroscope.
2. Study of cellstructure.
3. Practice on mitotic celldivision.
4. Practice on meiotic celldivision.
5. Practice on meiotic celldivision.
6. Probability and Chi-squaretest.
7. Monohybrid and itsmodifications.
8. Dihybrid.

ANDHRA UNIVERSITY
B. Vocational course
AGRICULTURE
2020-21 Admitted Batch
I Year Semester – I
FUNDAMENTALS OF GENETICSMODEL QUESTION PAPER

Time:3Hours Maximum: 75Marks

SECTION – A

Answer any **FIVE** questions. Each question carriesequalmarks. (5*5 =25)

1. What are the characteristics ofMutations.
2. Explain lac operon concept of general regulation with neat labeleddiagram.
3. Differentiate between linkage & Crossingover.
4. Explain Mendel's law of heredity with suitableexamples.
5. Write the Properties of Geneticcode.
6. Write about types of DNA &RNA.
7. Explain the experiment to show cytological proof of crossingover.
8. Explain the different types of structural chromosomal aberration with suitable illustrations.

SECTION – B

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

1. a) Explain Semi Conservative method ofreplication.

   (OR)

   b) Explain the experiment for identification of recessive lethal mutations in Drosophila.
2. a) Differentiate between mitosis &meiosis.

   (OR)

   b) Explain lethal gene action with the help of suitable example.
3. a)Definegeneinteraction?Explainanytwoofthegeneinteractionswithhelpofsuitable examples.

   (OR)

   b) Explain different models of sex determination in plants.
4. a) Explain about the special types ofchromosomes.

   (OR)

   b) Describe the effects of various factors that affect the frequency of recombination.
5. a) Explain the Phenomenon of multiple allele with the help of an appropriateexample.

   (OR)

   b) Write about classification, Characteristics of linkage