**B.Voc** PROGRAM (4 years Honors)

2020-21 onwards (21 Jan 21)

**B. Voc Agri-Entrepreneurship**

| Members of BOS (Contact details) | | |
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## Skill Enhancement Courses (SECs) for Semester -V,

From 2022-23(Syllabus-Curriculum)

Structure of SECs for Semester–V

*(To choose One pair from the Four alternate pairs of SECs)*

| Semester No | Course No. | Course Name | Course type (T/L/P) | Hrs./ week | Credits | Max. Marks Cont/ Int/Mid Assessment | Max. Marks Sem-end Exam | Total |
|---|---|---|---|---|---|---|---|---|
| | | **THIRD YEAR** | | | | | | |
| **Semester V** | 1 | Analytical Methods in Chemistry – 1 (Elective from common B.Sc syllabus) * | T | 4 | 4 | 25 | 75 | 100 |
| | 2 | Analytical Methods in Chemistry - 1(Elective from common B.Sc syllabus) * | P | 2 | 1 | - | 50 | 50 |
| | 3 | Analytical Methods in Chemistry – 2(Elective from common B.Sc syllabus) * | T | 4 | 4 | 25 | 75 | 100 |
| | 4 | Analytical Methods in Chemistry – 2 (Elective from common B.Sc syllabus) * | P | 2 | 1 | - | 50 | 50 |
| | 5 | Principles of seed technology | T | 4 | 4 | 25 | 75 | 100 |
| | 6 | Principles of seed technology | P | 2 | 1 | - | 50 | 50 |
| | 7 | Disease of field crops and their management | T | 4 | 4 | 25 | 75 | 100 |
| | 8 | Disease of field crops and their management | P | 2 | 1 | | 50 | 50 |
| | 9 | Weed management | T | 4 | 4 | 25 | 75 | 100 |
| | 10 | Weed management | P | 2 | 1 | - | 50 | 50 |
| | 11 | Introduction of agriculture economics and farm management | T | 4 | 4 | 25 | 75 | 100 |
| | 12 | On Job Training | P | 2 | 1 | - | 50 | 50 |
| | | Total | | 36 | 30 | | | |

**\* Common With B.Sc**

**SEMESTER V; 2022-2023**
**PAPER: ANALYTICAL METHODS IN CHEMISTRY - 1**
(Skill Enhancement Course, 05 Credits)
Max Marks: Theory: 100 + Practical: 50

**Credits: 4**                                                                                    **Teaching Hours: 4**

## I. Learning Outcomes:

Students after successful completion of the course will be able to:

1. Identify the importance of solvent extraction and ion exchange method.

2. Acquire knowledge on the basic principles of volumetric analysis and gravimetric analysis.

3. Demonstrate the usage of common laboratory apparatus used in quantitative analysis.

4. Understand the theories of different types of titrations.

5. Gain knowledge on different types of errors and their minimization methods.

## II. Theory:

### Unit-1: Quantitative analysis-1

1. A brief introduction to analytical methods in chemistry

2. Principles of volumetric analysis, concentration terms- Molarity, Molality, Normality, v/v, w/v, ppm and

   ppb, preparing solutions- Standard solution, primary standards and secondary standards.

3. Description and use of common laboratory apparatus- volumetric flask, burette, pipette, beakers, measuring

   cylinders.

### Unit-2: Quantitative analysis-2

1. Principles of volumetric analysis: Theories of acid-base (including study of acid-base titration curves),

   redox, complex metric, iodometric and precipitation titrations-choice of indicators for the saturations.

2. Principles of gravimetric analysis: precipitation, coagulation, peptization, co precipitation, post

   precipitation, digestion, filtration, and washing of precipitate, drying and ignition.

### Unit-3: Treatment of analytical data

1. Types of errors- Relative and absolute, significant figures and its importance, accuracy - methods of

   expressing accuracy, errors- Determinate and indeterminate and minimization of errors, precision-methods

   of expressing precision, standard deviation and confidence interval.

**Unit-4: Separation techniques**

1. Solvent Extraction: Introduction, principle, techniques, factors affecting solvent extraction, Batch extraction, continuous extraction and counter current extraction.

2. Synergism. Application-Determination of Iron (III).

3. Ion Exchange method: Introduction, action of ion exchange resins, applications.

**Unit-5**: **Analysis of water**

1. Determination of dissolved solids, total hardness of water, turbidity, alkalinity, Dissolved oxygen, COD, determination of chloride using Mohr's method.

**III. References**

1. Fundamentals of Analytical Chemistry by F.James Holler, Stanley R Crouch, Donald M.Westand Douglas A.Skoog, Ninth edition, Cengage.

2. Analytical Chemistry by Gary D.Christian, Purnendu K.Dasgupta and KevinA.Schug,Seventh edition, Wiley.

3. Quantitative analysis by R.A.DayJr. And A.L.Underwood, Sixth edition, Pearson.

4. Text book of Vogel's Quantitative Chemical Analysis, Sixth edition, Pearson.

5. Text book of Environmental Chemistry and Pollution Control by S.S.Dara and D.D.Mishra, Revised edition, S Chand & CoLtd.

**SEMESTER V; 2022-2023**
**PRACTICAL: ANALYTICAL METHODS IN CHEMISTRY - 1**

**Credits :1**                                              **Teaching Hours:2**

**Learning Outcomes:**

On successful completion of this practical course, student shall be able to:

1. Estimate Iron (II) using standard Potassium dichromate solution

2. Learn the procedure for the estimation of total hardness of water

3. Demonstrate the determination of chloride using Mohr's method

4. Acquire skills in the operation and calibration of pH meter

5. Perform the strong acid vs strong base titration using pH meter

**Practicals:**

1. Estimation of Iron (II) using standard Potassium dichromate solution (using DPA indicator)

2. Estimation of total hardness of water using EDTA

3. Determination of chloride ion by Mohr's method

4. Study the effect on pH of addition of HCl/NaOH to solutions of acetic acid, sodium acetate and their mixtures.

5. Preparation of buffer solutions of different pH (i) Sodium acetate-acetic acid, (ii) Ammonium Chloride,(iii)  Ammonium hydroxide.

6. pH metric titration of (i) strong acid vs. strong base, (ii) weak acid vs. strong base.

7. Determination of dissociation constant of a weak acid.

**Lab References:**

1. Text book of Vogel's Quantitative Chemical Analysis, Sixth edition, Pearson.

**SEMESTER V; 2022-2023**
**PAPER: ANALYTICAL METHODS OF CHEMISTRY - 1**
**MODEL PAPER**

Time: 3 Hours                                                                                      Maximum: 75 Marks

**ANSWER ANY FIVE QUESTIONS OF THE FOLLOWING          (5X 5) =25M**

1.Write a sort note on standard solution ?

2.Define molarity and normality ?

3.Explain complexometric titrations with examoles ?

4.Define coagulation and preciitaization ?

5.Types of errors ?

6.What is significant figures and its importance

7.Define turbidity and alkalinity ?

8.Principal of solvent extraction ?

**ANSWER ALL OF THE FOLLOWING                              (10 X 5)= 50M**

1.  a. Explain principals of volume analysis and give brief introduction to analytical methods ?
                                or
    b. Description of common use of laboratory apparatus ?

2.  a.  Theories of acid base titration? with examples ?
                                or
    b.Write the following with examples
        1. peptizaton
        2. digestion
        3. filtration
        4. co-precipitation and post-precipitation

3.  a. Define accuracy methods to express accuracy and minimization of errors ?
                                or
    b. Define precision methods and standard deviation and confidence interval ?

4.  a. Ion exchange method principle and resins and write their applications ?
                                or
    b. Explain factors efficiency of solvent exctraction batch extraction ,counter current extraction ? with examples ?

5. a. Determination of chlorides by using mohr s method ?
                                or
    b. Define total hardness of water COD and DO ?

**SEMESTER V; 2022-2023**
Semester – V/ Practical (Skill Enhancement Course)
ANALYTICAL METHODS OF CHEMISTRY - 1

**Max. Time : 3 Hours**                                                                 **Max. Marks : 50**

1. Major question?                                                      20 M

2. Minor question?                                                      15 M

3. Record + Viva-voce                                          10+5 = 15 M

**SEMESTER V; 2022-2023**
**PAPER: ANALYTICAL METHODS IN CHEMISTRY - 2**
(Skill Enhancement Course, 05 Credits)
Max Marks: Theory: 100 + Practical: 50

**Credits: 4**                                                                 **Teaching Hours: 4**

## I. Learning Outcomes:

Students after successful completion of the course will be able to:
1. Identify the importance of chromatography in the separation and identification of compounds in a mixture
2. Acquire a critical knowledge on various chromatographic techniques.
3. Demonstrate skills related to analysis of water using different techniques.
4. Understand the principles of spectro chemistry in the determination of metal ions.
5. Comprehend the applications of atomic spectroscopy.

## II. Theory:

**Unit-1:**
Chromatography-Introduction and classification
1. Principle, Classification of chromatographic methods, Nature of adsorbents, eluents,
2. Rf values, factors affecting Rf values.

**Unit-2:**
TLC and paper chromatography
1. Thin layer chromatography: Principle, Experimental procedure, preparation of plates, adsorbents and solvents, development of chromatogram, detection of spots, applications and advantages.
2. Paper Chromatography: Principle, Experimental procedure, choice of paper and solvents, various modes of development- ascending, descending, radial and two dimensional, applications.

**Unit-3**:
Column chromatography
1. Column chromatography: Principle, classification, Experimental procedure, stationary and mobile phases, development of the Chromatogram, applications.
2. HPLC: Basic principles, instrumentation –block diagram and applications.

**Unit-4:**
Spectrophotometry
1. Principle, Instrumentation: Single beam and double beam spectrometer, BeerLambert's law- Derivation and deviations from Beer-Lambert's law, applications of BeerLambert's law-Quantitative determination of $Fe^{+2}$, $Mn^{+2}$ and $Pb^{+2}$

**Unit-5:**
Atomic spectroscopy 8hours
1.Types, atomizer, atomic absorption and emission and applications.

## III. References

1. Fundamental so Analytical Chemistry by F.James Holler, Stanley R Crouch, Donald M.Westand Douglas A.Skoog, Ninth edition, Cengage.
2. Analytical Chemistry by Gary D.Christian, Purnendu K.Dasgupta and Kevin A.Schug, Seventh edition, Wiley.
3. Quantitative analysis by R.A.Day Jr. and A.L.Underwood, Sixth edition, Pearson.
4. Text book of Vogel's Quantitative Chemical Analysis, Sixth edition/ Pearson.

**SEMESTER V; 2022-2023**

**PRACTICAL: ANALYTICAL METHODS IN CHEMISTRY - 2**

**Credits:1**                                                                                                      **Teaching Hours:2**

**I. Learning Outcomes:**

On successful completion of this practical course, student shall be able to:

1. Perform the separation of a given dye mixture using TLC
2. Learn the preparation of TLC plates
3. Demonstrate the separation of mixture of amino acids using paper chromatography
4. Acquire skills in using column chromatography for the separation of dye mixture

**Practicals**:

1. Separation of a given dye mixture (methyl orange and methylene blue) using TLC (using alumina as adsorbent).
2. Separation of mixture of methyl orange and methylene blue by column chromatography.
3. Separation of given mixture of amino acids (glycine and phenyl alanine) using ascending paper chromatography.
4. Separation of food dyes using Column Chromatography
5. Separation of triglycerides using TLC
6. Verification of Beer lambert's law. (Using potassium permanganate solution) using colorimeter /spectrophotometer.

**Lab References:**

1. Text book of Vogel's Quantitative Chemical Analysis, Sixth edition, Pearson.
2. Vogel A. I. Practical Organic Chemistry, Longman Group Ltd.
3. Bansal R.K. Laboratory Manual of Organic Chemistry, Wiley- Eastern.
4. Ahluwalia V. K. and Aggarwal R. Comprehensive Practical Organic Chemistry, University press.
5. Mann F.Gand Saunders B.C, Practical Organic Chemistry, Pearson Education.

**SEMESTER V; 2022-2023**
**PAPER: ANALYTICAL METHODS OF CHEMISTRY - 2**
**MODEL PAPER**

Time: 3 Hours                                                                 Maximum: 75 Marks

**ANSWER ANY FIVE QUESTIONS OF THE FOLLOWING          (5X 5)= 25M**

1. Factors effecting Rf values?

2. Principle of chromatography?

3. Principle of colunchropnotagraphy its application?

4. Exaplain stationary phase and mobile phase?

5. single beam spectrometer?

6. Beer lamberits law?

7. Exaplain Atomizer?

8. Application of spectrophotometry?


**ANSWER ALL OF THE FOLLOWING                                    (10 X 5)= 50M**

   (1) a. Classification of chromatographic methods and its principle?
                               (Or)
       b. Explain nature of adsorbents eluents and Rf values?

   (2)  a. Thin layer chromatography principle and experiment procedure and write its application?
                               (Or)
        b. Explain principle and experimental procedure of paper chromatography?

   (3) a. Explain the principle and instrumentation of Hphe with applications?
                               (Or)
       b. Explain column chromatography with experimental procedure and its principle?

   (4)  a. Explain principle and instrumentation of double beam spectrophotometer?
                               (Or)
        b. Application of beers law of Quantitative determination of Fe+2xmn+2 and pb+2?

   (5)  a. explain principles atomic spectroscopy and types?
                               (OR)
        b. Atomic absorption and emissions with oblications?

**SEMESTER V; 2022-2023**
Semester – V/ Practical (Skill Enhancement Course)
ANALYTICAL METHODS OF CHEMISTRY - 2

Max. Time : 3 Hours                                                     Max. Marks : 50

1.  Major question?                                                      20 M

2.  Minor question?                                                      15 M

3.  Record + Viva-voce                                               10+5 = 15 M

**SEMESTER V; 2022-2023**
**PAPER: PRINCIPLES OF SEED TECHNOLOGY**
(Skill Enhancement Course, 05 Credits)
Max Marks: Theory: 100 + Practical: 50

**Credits: 4**                                                                **Teaching Hours: 4**

## LEARNING OUTCOMES

General Objective:
a. To impart knowledge to the students on the seed production and seed science and technology aspects in relation to Seed Act
b. Specific Objectives
c. By the end of the course, the students will be able to understand the concepts of quality seed production of different field and vegetable crops
d. study about different classes of seed and maintenance of genetic purity during seedproduction
e. Learn about seed certification procedure, seed drying, processing, cleaning, testing, packaging,storage, marketing etc.

## Theory Lecture Outlines
### Unit 1
1. Introduction to seed technology – definitions – concept, role and goals of seed technology differences between scientifically produced seed and grain used as seed – Introduction to seedand seed quality Seed - definition - Seed structure - Seed development and maturation
2. Germination
   - phases of seed germination
   - Dormancy - types of seed dormancy - Seed senescence - causes ofseed senescence Seed quality characteristics - significance
   - Classes of seed - Generation system of seed multiplication in seed supply chain .
3. Testing, release and notification of varieties – Central Variety Release Committee (CVRC) and State Variety Release Committee (SVRC)
4. Deterioration of crop varieties – factors responsible for loss of genetic purity –maintenance of genetic purity during seed production – safeguards for maintenance of genetic purity

### Unit 2
1. importance – development of inbred lines, single crosses, double crosses, three way crosses etc. – evaluation of single cross and double cross hybrids
2. Genetic and agronomic principles of seed production
3. Seed replacement rate and varietal replacement - Seed Multiplication Ratio - Seed renewalperiod

### Unit 3
1. Seed testing – objectives of seed testing – International Seed Testing Association (ISTA) and Association of Official Seed Certifying Agencies (AOSCA) – establishment of Seed Testing Laboratory (STL) – seed testing procedures for quality assessment
2. Post harvest seed handling Techniques - Threshing – methods
3. Drying - methods of seed drying - advantages and disadvantages Seed processing – definition – importance

## Unit 4

1. Seed cleaning and grading - upgrading - equipments - working principles
2. Seed treatment - importance - types - Seed invigouration techniques - seed hardening - seed fortification - seed priming - Seed enhancement techniques - seed coating - seed pelleting.

## Unit 5

1. Seed Act and Seed Act enforcement – main features of the Seed Act 1966 – Central Seeds Committee – Central Seed Certification Board – State Seed Certification Agency – Central Seed Testing Laboratory – State Seed Testing Laboratory –
2. Enforcement of the Seed Act – sampling – duties and powers of seed inspectors – offenses of Seed Act and penalties
3. World Trade Organization (WTO) – objectives and functions – Intellectual Property Rights (IPR) – Protection of Plant Varieties and Farmers' Rights (PPV and FR) Act – Plant Breeders' Rights (PBR) – benefits of PBR – disadvantages of PBR

**References**

Agarwal, P.K. 1994. *Principles of Seed Technology*. ICAR, New Delhi.
Agarwal, P.K. and Dadlani, M. 1986. *Techniques in Seed Science and Technology*.South Asian Publishers, New Delhi.
Agarwal, R.L. 1996. *Seed Technology*. Oxford and IBH Publication Co., NewDelhi.

**SEMESTER V; 2022-2023**
**PRACTICAL: PRINCIPLES OF SEED TECHNOLOGY**

**Credits :1**                                                                                    **Teaching Hours:2**

**Learning outcomes:**

After completion of this practical course all the students should able to
a. Learn the skills in selfing techniques, crossing techniques
b. Learn the skills of rouging
c. In hybrid seed production, the skills of growing parental lines, staggered sowings,flowering synchronizing the male and
d. Skill in sampling and analytical procedures for purity testing and detection ofspurious seed

**Practicals :**

1  Floral biology in self pollinated species and cross pollinated species.
2  Selfing techniques.
3  Crossing techniques.
4  Techniques of seed production in self and cross pollinated crops using A/B/Rand twoline system.
5  Methods of seed dormancy breaking .
6  Tools and techniques for optimizing hybrid seed production.
7  Concept of rouging in seed production plot.
8  Detasselling techniques in hybrid seed production in maize
9  Emasculation and dusting techniques in  hybrid seed production.
10  Sampling and analytical procedures for purity testing and detection of spurious seed.
11  Visit to public and private seed production and processing plants.

**SEMESTER V; 2022-2023**
**PAPER: PRINCIPLES OF SEED TECHNOLOGY**
**MODEL PAPER**

Time: 3 Hours                                                                 Maximum: 75 Marks

**ANSWER ANY FIVE QUESTIONS OF THE FOLLOWING**
**(5X 5)= 25M**

1. Define seed technology and write the differences between grain and the seed
2. Write briefly about development of seed industry in India
3. Explain about the different classes of seed and their standards
4. Write the procedure for maintenance of Nucleus seed and Breeder seed
5. What is male sterility ?and what are the different types of male sterility?
6. Explain about qualifications for a variety to be notified
7. Write about seed testing and its parameters
8. Explain about different types of seed testing

ANSWER ALL QUESTIONS: (each question carries equal marks (5X10) 50 M

1. a.Explain the procedure of testing, releasing and notification of a variety?

(OR)

b.Write about our seed policy and seed demand forecasting?

2. a. Write about different parameters of seed quality and factors affecting the seed quality?

(OR)

b.Write about the hybrid seed production procedure?

3. a.Describe the procedure for seed certification?

(OR)

b.Describe the procedure of seed testing

4. a.Write about the enforcement of seed act and mention the duties of seed inspectors?

(OR)

b.Write briefly about W T O and P B R?

5. a.Write about seed cleaning and grading?

(OR)

b.What are the types of seed treatment and write their importance?

**SEMESTER V; 2022-2023**
Practical (Skill Enhancement Course)
PRINCIPLES OF SEED TECHNOLOGY

Max. Time : 3 Hours                                             Max. Marks : 50

1. Major question?                                                                12 M

2. Minor question?                                                                  8 M

3. Identification, salient features and ecological importance of the following.

   (Spotters /Specimens/ Charts/ Pictures etc choose if anyone from syllabus)   4x5= 20 M

      a.
      b.
      c.
      d.

4. Record + Viva-voce                                                           6+4 = 10 M

**SEMESTER V; 2022-2023**
**PAPER: DISEASES OF FIELD CROPS AND THEIR MANAGEMENT**
(Skill Enhancement Course, 05 Credits)
Max Marks: Theory: 100 + Practical: 50

**Credits: 4**                                                      **Teaching Hours: 4**

**Unit 1-**
Diseases of Cereals
Diseases of Rice
Diseases of wheat and sorghum
Diseases of maize, cumbu, bajra and ragi
Diseases of minor millets.

**Unit 2 –**
Diseases of Pulses
Diseases of red gram
Diseases of green gram
Diseases of Bengal gram and cowpea
Diseases of soybean and field bean

**Unit 3 –**
Diseases of oil seeds
Diseases of ground nut
Diseases of mustard and rape seed
Diseases of sesame
Diseases of sunflower and safflower
Diseases of castor

**Unit 4 –**
Diseases of cash crops
Diseases of cotton
Diseases of jute
Diseases of sugarcane
Diseases of Tobacco

**Unit 5 –**
Integrated Disease Management
Diseases of mulberry
Bio-control agents in plant disease management
Botanicals in Plant disease management
Genetic engineering in plant disease management
Integrated disease management in different crops.

**SEMESTER V; 2022-2023**
**PRACTICAL: DISEASES OF FIELD CROPS AND THEIR MANAGEMENT**

**Credits:1**                                                                 **Teaching Hours:2**

**Practicals:**

1. Identification of various diseases
2. Identification of various plant protection chemicals
3. IDM in rice
4. IDM in maize
5. IDM in sorghum
6. Use of bio control agents in plant disease management
7. Preservation of disease specimens
8. Cultural methods of disease control
9. Herbarium

**SEMESTER V; 2022-2023**
**PAPER: DISEASES OF FIELD CROPS AND THEIR MANAGEMENT**
**MODEL PAPER**

Time: 3 Hours                                                                                     Maximum: 75 Marks

**ANSWER ANY FIVE QUESTIONS OF THE FOLLOWING**
**(5X 5)=25M**

1. Write any 2 disease of rice and their management

2. Wheat diseases any 2 and their control management

3. List out diseases of red gram and their control management

4. List out disease of green gram and their control management

5. Disease of ground nut and their remedial measures

6. Disease of mustard any 2 and their management

7. Disease of tobacco any two and their remedial measures

8. List out the sugarcane disease and their control measures

**ANSWER ALL OF THE FOLLOWING**
**(10 X 5)=50M**

1.    a. Write a note on cotton disease
                Or
      b. Write about sesame disease

2.    a. Write a note on genetic engineering and plant disease management
                Or
      b. Write about sunflower disease

3.    a. Write a note on jute disease
                Or
      b. Write about Bengal gram disease

4.    a. Write a note on castor disease
                Or
      b. Write about soyabean disease

5.     a. Write a note of integerated disease management in different crops
                Or
      b. Write about disease of cow pea

**ADIKAVINANNAYAUNIVERSITY::RAJAHMAHENDRAVARAM**
B.Voc Agriculture Entrepreneurship Syllabus (w.e.f:2020-21A.B)

**SEMESTER V; 2022-2023**
Practical (Skill Enhancement Course)
DISEASES OF FIELD CROPS AND THEIR MANAGEMENT

Max. Time : 3 Hours                                                    Max. Marks :
                                    50

1.  Major question?                                                12 M

2.  Minor question?                                                 8 M

3.  Identification, salient features and ecological importance of the following.

    (Spotters /Specimens/ Charts/ Pictures etc choose if anyone from syllabus)   4x5= 20 M

            a.
            b.
            c.
            d.

4.  Record + Viva-voce                                             6+4 =
    10 M

**SEMESTER V; 2022-2023**
**PAPER: WEED MANAGEMENT**
(Skill Enhancement Course, 05 Credits)
Max Marks: Theory: 100 + Practical: 50

**Credits: 4**                                                     **Teaching Hours: 4**

**Theory:**

**Unit 1:**

Introduction - weed definition - harmful and beneficial effects of weeds

Classification of weeds – classification based on morphology – life cycle – habitat – origin – association – special features and soil pH with examples.

**Unit 2:**

Propagation of weeds – sexual – asexual – vegetative reproduction – dispersal of weed seeds and fruits – dispersal agents – wind and water – animal – man – manures –farm implements and silage – dispersal of vegetative propagules

Weed Biology – characteristic features of weeds – weed ecology – definition – persistence of weeds climatic – edaphic and biotic factors – crop weed association with some important crops like rice, maize, wheat, jowar, pulses, groundnut, sugarcane, cotton and tobacco.

**Unit 3:**

Crop -weed competition - principles – factors - critical period of crop-weed competition - allelopathy.

Methods of weed management – preventive weed control measures – physical / mechanical, cultural, Chemical and biological methods of weed control – bioherbicides - integrated weed management

**Unit 4:**

Herbicides – definition - advantages and limitations of herbicide usage in India- classification of herbicides based on chemical nature - time and method of application

**Unit 5**

Classes of herbicides based on – selectivity – spectrum – translocation – residual nature – soi sterilants and fumigants – types of formulations.

**III YEAR; SEMESTER V; 2022-2023**
**PRACTICAL: WEED MANAGEMENT**

**Credits:1**                                                              **Teaching Hours:2**

**Practicals:**

1. Techniques of weed preservation

2. Weed identification

3. Studies on biology of important weeds

4. Studies on losses caused by weeds

5. Study on herbicide formulations and mixture of herbicides

6. Study on herbicide and nutrient compatibility

7. Studies on shift of weed flora in long term-experiments

8. Study of methods of herbicide application and spraying equipments

9. Calculations of herbicide doses

10. Calibration of spray equipments

# ADIKAVINANNAYAUNIVERSITY::RAJAHMAHENDRAVARAM
## B.Voc Agriculture Entrepreneurship Syllabus (w.e.f:2020-21A.B)

### SEMESTER V; 2022-2023
### PAPER: WEED MANAGEMENT
### MODEL PAPER

Time: 3 Hours                                                                    Maximum: 75 Marks

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**ANSWER ANY FIVE OF THE FOLLOWING                    (5 X5)=25M**

1. Define weed and explain their harmfulness  ?
2. Classify weeds  based on morphology association and nature  ?
3. What are the major weeds in rice field?
4. Briefly explain the cultural methods of weeds control  ?
5. What are the major weeds in sugar cane and their controls measures ?
6. Define herbicides and explain their advantages ?
7. Explain vegetative reproduction in weeds ?
8. Explain about different methods of herbicide application ?


**ANSWER ALL OF THE FOLLOWING                    (10 X 5)=50M**

1. a.Classify the weeds on the basis of ife cycle and their utility ?
                    OR
   b.Define explain about post emergency  herbicides and benefits ?

2. a.what is integrated weed management ?  discuss in detail ?
                    OR
   b.Explain about selectie and non selective herbicides ?

3. a.Explain about different methods of weed management ?
                    OR
   b.Explain about soil sterilants and fumigants ?

4. a.Explain different types of herbicide formulatins ?
                    OR
   b.Explain about classification of herbicides ?

5. a.Explain about classification of weeds ?
                    OR
   b.Explain about mechanical control of weed management ?

**SEMESTER V; 2022-2023**
Practical (Skill Enhancement Course)
WEED MANAGEMENT

Max. Time : 3 Hours                                             Max. Marks : 50

1. Major question?                                                    12 M

2. Minor question?                                                     8 M

3. Identification, salient features and ecological importance of the following.

   (Spotters /Specimens/ Charts/ Pictures etc choose if anyone from syllabus)   4x5= 20 M

   a.
   b.
   c.
   d.

4. Record + Viva-voce                                            6+4 = 10 M

**SEMESTER V; 2022-2023**
**PAPER: INTRODUCTION TO AGRICULTURAL ECONOMICS AND FARM MANAGEMENT**
(Skill Enhancement Course, 05 Credits)
Max Marks: Theory: 100 + Practical: 50

**Credits: 4**                                                        **Teaching Hours: 4**

**Theory:**
**Unit 1:**
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 2:**
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 3:**
 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 4:**
 Product – Product relationship: Meaning – Production Possibility Curve – Marginal Rate of Product
Transformation – Enterprise relationship: Joint Products, Complementary, Supplementary and Competitive
Products – Isorevenue line – Optimum Combination of Products – Principle of Equi– Marginal Returns –
Principle of Opportunity Cost and Minimum Loss Principle.

**Unit 5:**

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

**SEMESTER V; 2022-2023**
**PAPER: INTRODUCTION TO AGRICULTUTRAL ECONOMICS AND FARM MANAGEMENT**
**MODEL PAPER**

Time: 3 Hours                                                                 Maximum: 75 Marks

**ANSWER ANY FIVE QUESTIONS OF THE FOLLOWING**
**(5X 5)=25M**

1. Define:
   a. Peasant farming
   b. Collective farming
   c. State farming
   d. Co-operative farming
   e. Corporate farming
2. Micro and Macro economics define them and expand POSDCORB.
3. Types of isoquats along with graph.
4. Types and farm of production function.
5. Write about product-product relationship.
6. Write about factor-product relationship.
7. Write about factor-factor relationship.
8. Describe farm planning and budgeting

**ANSWER ALL QUESTIONS: (each question carries equal marks**
**(5X10) =50 M**

1. **a**. explain the three stages of classical production
                  Or
   **b**. determination of optimum level of input and optimum level of output.
2. **a** explain factor- factor relationship and MRTS.
                  Or
   **b**. explain return to scale, elasticity of factor substitution and expansion path
3. **a.** types of farming system along with advantages and disadvantages.
                  Or
   **b**. discuss farm management decisions.
4. **a**. Define risk uncertainty and write the safeguards, types of risk uncertainity.
                  Or
   **b**. Describe partial budgeting, enterprise budgeting, complete budgeting and cash flow budgeting along
        with their types.
5. **a**. Write about production possibility curve along with graph.
                  Or
   **b**. What is marginal rate of product transformation along with graph?

**SEMESTER V; 2022-2023**
**OJT (ON JOB TRAINING)**

**Credits: 1**                                                    **Teaching Hours: 2**

**Skills Outcomes:**

 On successful completion of this practical course, student shall be able to:
1. Prepare the project proposal and project appraisal
2. Assess the cost benefit analysis of the project.
3. Execute the questionnaires for market surveys and socio-economics of farmers.
4. Analyze the socio-economic conditions of farmers and the role of cooperative societies.
5. Know the International trade of horticulture products and contribution of farmers to Indian economy.

| CONTENT | EVALUATION | MARKS |
|---|---|---|
| FIELD TRIPS | 3X5 | 15 |
| PROJECT /INDUSTRIAL OR INSTITUTE TRAINING REPORT & SEMINAR | 15+5 | 20 |
| FIELD COMPONENTS | 10X1 | 10 |
| VIVA VOCE | - | 05 |
| TOTAL | | 50 |