

**B.A. Agro Services (Vocational Course) III to VI sem**

**SEMESTER-III**

**Time – 3 hrs.  
Marks- 45+5**

**Paper- I Irrigation Management**

**Note: Attempt *five* questions in all, selecting two questions from each Unit. Question No.1 is compulsory (short answer type).**

- **Nine questions are to be set spread over the entire syllabus. All questions carry equal marks.**

**Unit-I**

1. Irrigation management- terminology, concept and importance towards Crop production.
2. Water resources-surface and ground water resources. Factors affecting Water resources-climatic factors.
3. Quality of irrigation water, management of poor quality irrigation water. Conductive use of poor and good quality water and influence of poor quality water on soil properties.

**Unit-II**

1. Methods of application of irrigation water and irrigation channels, surface and sub-surface irrigation method, Sprinkler and drip irrigation methods
2. Concept of irrigation scheduling  
Time of irrigation based on phonological stages and soil moisture status of the crop. Amount of water to be irrigated . Irrigation schedules for different important crops.
3. Interaction of irrigation with other management practices.

## **SEMESTER-III**

**Time – 3 hrs.  
Marks- 45+5**

### **Paper- II Soil Management**

**Note: Attempt five questions in all, selecting two questions from each Unit.  
Question No.1 is compulsory (short answer type).**

- **Nine questions are to be set spread over the entire syllabus. All questions carry equal marks.**

#### **Unit-I**

1. Concept of total and available nutrients
2. Soil testing and sampling

#### **Unit –II**

1. Visual diagnosis of deficiency symptoms in plants
2. Management practices for nutrient elements, nutrients toxicity especially minor nutrients elements

#### **List of Books**

1. Irrigation Management in Crops: Suraj Bhan
2. Irrigation Theory and Practice: A.M. Michael
3. Water Quality for agriculture: R.S. Ayers and D.W. Westcat
4. Diagnostic criteria for plants and soils: Chapman, Homer D.
5. Methods of Soil analysis: Block, C.A.
6. Soil fertility and fertilizers: Amar Singh

## **SEMESTER-IV**

**Time – 3 hrs.  
Marks- 45+5**

### **Paper- I    Diagnosis of Crop Health Problems**

**Note: Attempt five questions in all, selecting two questions from each Unit. Question No.1 is compulsory (short answer type).**

- **Nine questions are to be set spread over the entire syllabus. All questions carry equal marks.**

#### **Unit-I**

1. Diagnosis of health problems of cereals-Rice, Wheat and Maize- their insect pests and diseases and their control measures.
2. Diagnosis of health problems of Sugarcane-important pests and diseases
3. Diagnosis of health problems of pulses-Bean, Gram, Arhar, Pea – their important insect pests and diseases and control measures

#### **Unit-II**

1. Diagnosis of health problems of oilseeds- Mustard and Groundnut and control measures.
2. Diagnosis of health problems of important vegetables and fruits and their control.

## SEMESTER-IV

hrs.

Time – 3

Marks- 45+5

### Paper- II Agriculture Pest Management

**Note: Attempt five questions in all, selecting two questions from each Unit. Question No.1 is compulsory (short answer type).**

- **Nine questions are to be set spread over the entire syllabus. All questions carry equal marks.**

#### Unit-I

1. General grouping of Pesticides
2. Preparation, use and application of home-made pesticides
3. Seed treatment and soil treatment with pesticides

#### Unit-II

1. Fumigation – different fumigants and their application techniques.
2. Rat, termites and bird control

#### List of Books:

1. Plant Protection: Principles and Practices: S.B. Chattopadhyay.
2. Principles & Practices of Kharif Crops: CCSHAU, Hisar
3. Principles and Practices of Rabi Crops: CCSHAU, Hisar
4. Plant Diseases- R.S. Singh
5. Agriculture Pests of South Asia and their Management: A.S. Atwal and G.S. Dhaliwal.

## **PRACTICALS**

(Annually)

Based on Semester (III & IV)

Max. Marks 90+10

Time: 6 Hrs. (two sessions)

1. Methods for testing quality of irrigation water in Lab.
2. Visual diagnosis of deficiency symptoms in plants.
3. Visit to irrigation command area/meteorological observatory.
4. Field visit in both summer, monsoon and winter season to nearby farmer's field and of one crop covered in theory and identification and listing of insect damage, diseases and insect pests.
5. Collection of specimens, herbarium making.
6. Safety precaution measures before, during and application of pesticides.
7. Seed treatment-dry and wet.
8. Fumigation- infield, warehouse and grain stocks.
9. Rat control and termite control

## **SEMESTER-V**

**Time – 3 hrs.  
Marks- 45+5**

### **Paper- I    Agricultural Machines**

**Note: Attempt five questions in all, selecting two questions from each Unit. Question No.1 is compulsory (short answer type).**

- **Nine questions are to be set spread over the entire syllabus. All questions carry equal marks.**

#### **Unit-I**

1. Principles and working of indigenous ploughs and improved plough-mould board plough and disc ploughs.
2. Working of Harrows-spike tooth harrows.

#### **Unit-II**

1. Working of seed-cum-fertilizer drill, planter, rice transplanter, sugarcane transplanter, chaff cutter, indigenous and improved harvesting equipments.
2. Manual and power-operated sprayer and dusters.
3. Repair and maintenance of above implements.

## SEMESTER-V

Time – 3 hrs.  
Marks- 45+5

### Paper- II Modern farm Management

**Note:** Attempt five questions in all, selecting two questions from each Unit.  
Question No.1 is compulsory (short answer type).

- Nine questions are to be set spread over the entire syllabus. All questions carry equal marks.

#### Unit-I

1. Management objectives-Functions of management. Difference between farm and business management.
2. Management of human resources-motivating personnel and controlling.
3. Production management – product planning, budgeting as a tool decision making.

#### Unit-II

1. Financial management- the accounting system, measures of profitability, financial planning-the cash flow budget capital funds management
2. Marketing management- the marketing programme , the marketing target. Market planning-the place strategy pricing of products, sales, promotion, marketing organization.
3. Importance of information system, sources-national and international, public and private sources.

#### List of Books:

1. Farm Machinery & Equipment: Smith
2. Farm Machines & Equipment: O.P. Nakra
3. Modern Farm Management- Kartar Singh
4. Indian Economy-Ruddar Dutt & M. Sundharam
5. Principles of Agricultural Engineering Vol. 1. : A.M. Michael & T.P. Ojha

## SEMESTER-VI

**Time – 3 hrs.**

**Marks- 45+5**

### **Paper- I Agro-processing and Credit Planning**

**Note: Attempt five questions in all, selecting two questions from each Unit.**

**Question No.1 is compulsory (short answer type).**

- **Nine questions are to be set spread over the entire syllabus. All questions carry equal marks.**

#### **Unit-I**

1. Procedures for preparation of projects, sources, terms and conditions of loans for financing agro-service and agro-processing projects.
2. Importance of credit: Classification of credit, sources, purpose for which credit is advanced by the financial institutions, source-wise and purpose-wise rates of interest charged, repayment schedule, credit planning for different forms of business organization

#### **Unit-II**

1. Assessment of post harvest losses of food grains.
2. Grain storage principles and practices. Food grain storage structures-rural storage structures, bag and bulk storage
3. Unit operations in food processing; cleaning, drying-grain drying principles and different types of dryers, milling-commercial milling of paddy, wheat and pulses.

## SEMESTER-VI

**Time – 3 hrs.**  
**Marks- 45+5**

### **Paper- II Food Processing and Preservation**

**Note: Attempt five questions in all, selecting two questions from each Unit. Question No.1 is compulsory (short answer type).**

- **Nine questions are to be set spread over the entire syllabus. All questions carry equal marks.**

#### **Unit-I**

1. Importance and scope of food preservation industry, food preservation principles, preservation of fruits and vegetables and processed foods-by pasteurization, sterilization and blanching, by drying and dehydration, canning of fruits and vegetables.
2. Principles of preparation of juices and squashes. Preservation with sugar- preparation of jam and jelly.
3. Preservation with salt-preparation of pickles, chutneys and sauces.

#### **Unit-II**

1. Spoilage in processed foods- canned foods, pickles and jams.
2. Storage and marketing of preserved products. Different types of storage of fresh fruit and vegetables. Knowledge of short-term storage and cold storage and its applications in food preservation.

#### **List of Books:**

1. Handling and Storage of Food Grains: S.V. Pingale
2. Post Harvest Technology for Cereals, pulses and oilseeds.
3. Home-Scale processing 7 Preservation of Fruit and Vegetables-CFIRI, Mysore.
4. Manual of Fruit and vegetables Preservation: B.S. Chundwat & R.N. Sharma.
5. A Manual of Food Preservation at Home: C.M. Bhatt & R.N. Sharma.
6. Fruits and Vegetables: R.N. Sharma.

**PRACTICALS**  
(Annually)  
Based on Semester (V & VI)

Max. Marks 90+10  
Time: 6 Hrs. (two sessions)

1. Study of different indigenous and improved ploughs-mould board and disc ploughs with its operation
2. Study of harrows, cultivators, seed drills, planters, transplanters and threshers with its operation.
3. Preparation of some selected agro-service and agro-processing projects according to local potentiality.
4. Frequent visits to the Banks and other financial institutions for collection of information regarding credit for financing the potential agro-service and agro-processing projects.
5. Determination of moisture content and milling qualities of food grains.
6. Visit to different storage structures and commercial milling plants.
7. Preparation of squashes, RHS and syrups.
8. Preparation of jam and jelly
9. Preparation of pickles, chutneys and sauces.
10. Visit of food processing industries.