

DESIGN OF QUESTION PAPER

Subject : AGRICULTURE

Paper : Theory

Class : XI

Full Marks : 70

Time : 3 Hours

WEIGHTAGE TO OBJECTIVES :						
Objectives			Marks	Percentage		
I.	Knowledge (K)			14	20	
	Understanding (U)			32	46	
	Application (A)			21	30	
	Skill (S)			3	4	
	Total :			70	100	
WEIGHTAGE TO FORM OF QUESTIONS :						
Form of questions		No. of Questions	Time (in minutes)	Marks	Percentage	
II.	Essay/Long Ans. (E/LA)		3	60	15	21
	Short Ans. (SA-I)		6	36	18	26
	Short Ans. (SA-II)		10	40	20	29
	Very Short Answer (VSA)		10	30	10	14
	MCQ		7	14	7	10
	Total :		36	180	70	100
	WEIGHTAGE TO CONTENTS :					
Unit / Content:			Marks	Percentage		
III.	A	Agriculture and Crop Production	i) Scope and Importance	5	7	
			ii) Physical Environment	12	17	
			iii) Agriculture Economics and Crop Production	13	18	
	B	Genetics and Plant Breeding	i) Genetics and Plant Breeding	15	22	
			Total :			70
	C.	Livestock Production	i) Scope and Importance	5	7	
			ii) Care and Management	15	22	
			iii) Bio-Waste Management and Govt. Scheme	5	7	
	IV.	SCEHEME OF SECTIONS : A, B and C				
V.	SCHEME OF OPTIONS : Internal option may be given in Essay Type Question & SA-I					
VI.	DIFFICULTY LEVEL :					
	Difficult		: 30 %			
	Average		: 50 %			
	Easy		: 20 %			

Abbreviation : K(Knowledge), U(Understanding), C(Comprehension), Exp.(Expression), Skill(S), E(Essay Type), SA (Short Answer Type), VSA (Very Short Answer Type), MCQ(Multiple Choice Question)

AGRICULTURE
THEORY
CLASS XI

One Paper

Time: 3 Hours

70 Marks

Section	Units	Marks	
		Unitwise	Total
I	Part A		
	Agriculture and Crop Production <ul style="list-style-type: none"> • Unit: I: Scope and Importance • Unit: II: Physical Environment • Unit: III: Agriculture Economics and Crop Production 	5 12 13	30
	Part B		
	Genetics and Plant Breeding <ul style="list-style-type: none"> • Unit: IV Genetics and Plant Breeding 	15	15
II	Livestock Production <ul style="list-style-type: none"> • Unit V: Scope and Importance • Unit VI: Care and Management • Unit VII: Bio-waste Management and Government Schemes 5 	5	25
		15	
Total			70

SECTION - I

PART A - AGRICULTURE AND CROP PRODUCTION:

Unit I: Scope and Importance:

- Definition of Agriculture, its branches
- Scope in the national economy and employment

Unit II: Physical Environment:

1. Climate and Weather, elements of Weather: Rainfall, Temperature, Humidity, Wind, Sunshine, Climate Change and Global warming.
2. Soil, Soil texture and structure and its types.
3. Soil erosion and Soil conservation.
4. Tillage definition and types. Concept of conservation tillage.

Unit III: Agriculture Economics and Crop Production

1. Agricultural Economics, Cooperative system in Agriculture, Crop insurance. Kisan Credit Cards. Marketing of Agricultural products (supply chain, retailing, wholesale), haats.
2. Package of practices in field crops like important varieties, seed rate, sowing time, intercropping operations, yield and marketing for Rice, Maize, Mustard, Soyabean, Groundnut, Pea, Sugarcane, gram & broad bean.
3. Package of practices of fruits: Mango, Banana, Lime, Grape, Pomegranate. Vegetables: Potato, Tomato, Cauliflower, Cabbage, Brinjal, Bottle gourd, Pumpkin, Cucumber. Flower- Rose, Gladiolus.
4. Methods of plant propagation – Layering and Cutting, and Tissue culture.

PART B - GENETICS AND PLANT BREEDING

Unit IV: Genetics and Plant Breeding

1. Cell and its structure, cell division-Mitosis and Meiosis and their significance in plant growth and development.
2. Introduction to -DNA, RNA, and their differences.
3. Role of Genetics in Plant breeding, self and cross-pollinated crops, methods of breeding in field crops-introduction, Selection, Hybridization, Mutation.
4. Mendel's laws of Inheritance. Their importance in plant breeding.

SECTION - II: LIVESTOCK PRODUCTION

Unit V: Scope and Importance

- (a) Importance of livestock in Agriculture, National Economy and Nutritional security
- (b) Important animal based food products and their role in our diet.
- (c) Important indigenous and exotic breeds of cattle, buffalo and poultry, and quantitative and qualitative production details of produces (milk, meat and eggs)
- (d) Concept of Anand pattern of cooperative system of milk procurement and pricing of milk. Marketing of milk in India.

Unit VI: Care and Management

- (a) Animal body structure and functions.
- (b) Concept of grazing and stall feeding including poultry feeding.

- (c) Principles of feeding, feeding practices; Important fodder crops; Silage and Hay preparation; Balanced ratio-definition and ingredients.
- (d) Housing of dairy animals and poultry.
- (e) Management of calves, bullocks, pregnant and milch animals as well as chicks and layers.
- (f) Economics of rearing dairy cattle , poultry.
- (g) Systems of milking by hand and by machine. Important considerations in both these methods.
- (h) Concept of clean milk production processing, pasteurization and packaging and milk. Familiarisation with the value added products from milk.
- (i) Principles of disease management and vaccination.
- (j) Signs of sick animals, symptoms of common diseases in cattle and poultry-Rinderpest, Black quarter, Foot and Mouth, Mastitis, Haemorrhagic Septicaemia, Solmonellosis, bird flu, Fowl Pox and Ranikhet disease, their prevention and control.

Unit VII: Bio-Waste Management and Government Schemes

- (a) Utilization of animals wastes in Biogas plant.
- (b) Important government schemes for development of livestock dairy, poultry in India. Their important features and eligibility criteria.

AGRICULTURE CLASS XI PRACTICAL

One Paper

Time: 3 hours

30 marks

Section	Units	Marks
I	Part A-Agriculture and Crop Production	08
	Part B- Genetics, Plant Breeding and Microbiology	04
II	Livestock practical	08
	Reports of the visit	05
	Viva voce	05
	Total	30

SECTION - I

PART A - AGRICULTURE AND CROP PRODUCTION

1. Agriculture and Crop Production

- (a) Visit to a crop field. Identify different crops growing in the field and make a report.

- (b) Identification of farm implements used for different operations, draw a design of at least 5 implements and make a report.
- (c) Identification of seeds of different crops.
- (d) Seed germination test. (two cereals , two pulses, two vegetables, two flowers)
- (e) Calculation of cost of production of rice crop in one hectare of land area & prepare a report.
- (f) Visit to an orchard and identify different fruit crops and make a report.
- (g) Identification of important vegetable crops, prepare a report.
- (h) Identification of important flower crops.
- (i) Orchard layout, digging of pits and planting of sapling of any one fruit crop.
- (j) Land preparation and sowing of rice crop seed in the bed.
- (k) Preparation of cropping scheme.**

SECTION – II

2. Livestock

- (a) Identification of body parts of dairy animals and Poultry.
- (b) Identification of common breeds of cows, buffaloes and poultry birds.
- (c) Handling and restraining of animals.
- (d) Testing of milk fat and SNF.
- (e) Visit to a local veterinary hospital and observe the condition of a sick animal and prepare a report.
- (f) Compute ration for an animal and poultry and prepare a report.
- (g) Visit to milk processing plant and on outlet a milk & milk products centre. Record the processing & sale of variety in milk based products.
- (h) Identification of feeds, fodder crops and grasses.
- (i) Visit to Biogas plant.

3. Report on the Visits

1. The student have to prepare a report of their visit to different organizations and submit to the subject teacher for the evaluation. The report must contain the student's original work and observations.
2. Prepare Herbarium of different crops and weed species. The leaves of the crops and weeds are pressed dried and mounted on the Herbarium sheet.

4. Viva Voce

Students can be asked questions based on:

- (i) Identification of objects
- (ii) Visit Report analysis.
- (iii) Experiences in their field visits, etc.

A range of 5 to 10 questions can be asked depending on the response of the student. Evaluation 5x1=5
Or should be based on number of questions answered. Evaluator should stick to the time and ½ x10=5
number of questions.

DESIGN OF QUESTION PAPER

Subject : AGRICULTURE
Paper : Theory
Class : XII
Full Marks : 70
Time : 3 Hours

WEIGHTAGE TO OBJECTIVES :						
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	MCQ		7	14	7	10
	Total :		36	180	70	100
	WEIGHTAGE TO CONTENTS :					
Unit / Content:			Marks	Percentage		
III.	I.	Advance Crop Production and Organic Farming	i) Advance Crop Production	16	23	
			ii) Organic Farming	9	13	
	II.	Post Harvest Management, Food Processing and Value Addition	i) Post Harvest Management	7	10	
			ii) Food Processing and Value Addition	20	28	
	III.	Subsidiary Enterprises of Agriculture	i) Subsidiary Enterprises in Agriculture	18	26	
	Total :			70	100	
IV. SCHEME OF SECTIONS : I,II and III						
V. SCHEME OF OPTIONS : Internal option may be given in Essay Type Question & SA-I						
VI.	DIFFICULTY LEVEL :					
		Difficult	:	30 %		
		Average	:	50 %		
		Easy	:	20%		

Abbreviation : K(Knowledge), U(Understanding), C(Comprehension), Exp.(Expression), Skill(S), E(Essay Type), SA (Short Answer Type), VSA (Very Short Answer Type), MCQ(Multiple Choice Question)

AGRICULTURE

Theory

Class XII

One paper

Time :3 hours

70 marks

Section	Titles	Marks	
		Unitwise	Total
I	Advanced Crop Production and Organic Farming Unit I : Advance Crop Production Unit II: Organic Farming	16 09	25
II	Post-Harvest Management, Food Processing and Value Addition Unit III: Post-Harvest Management Unit IV: Food Processing and Value Addition	07 20	27
III	Subsidiary Enterprises of Agriculture Unit V: Subsidiary Enterprises in Agriculture	18	18
Total			70

SECTION - I

- Unit- I: Advanced Crop Production
- Soil fertility, productivity and concept of essential plant nutrients. Classification of essential plant nutrients.
- Roles and functions of essential plant nutrients, their important deficiency symptoms.
- Introduction to manure, fertilizers, Bio-fertilizers, their methods of application. Concept of Integrated Nutrient Management (INM).
- Various irrigation methods. Concept of precision and pressure irrigation - Drip and sprinkler irrigation.
- Methods of insect pest and disease management - Chemical, Biological and Mechanical. Concept of Integrated Pest Management (IPM).

Unit - II: Organic Farming

- Concept, history and importance of Organic farming.
- Important food products grown organically. Important Government Schemes for the promotion of organic farming in our country. Kitchen gardening.

SECTION-II

Unit III: Post Harvest Management

Post harvesting management of fruits, vegetables and flowers, cereals, pulses and oilseeds.

Important Government schemes for food sector.

Unit IV: Food Processing and Value Addition

- Principles and methods of food processing and preservation. Benefits of food processing.
- Important value added products from fruits, vegetables, cereals, pulses and oil seeds. Preparation of jam, jelly, ketchup, , pickles, juice.
- Flowers and their harvesting: important processed flower products, packaging, storage and their marketing.
- Concept of safe food and important food regulations.

SECTION-III

Unit V: Subsidiary Enterprises in Agriculture

- Important subsidiary enterprises based on Agriculture including Horticulture and their importance in the socio-economic status of an individual.
- Mushroom, their nutritional status and methods of production
- Beekeeping and its important usage and importance of Honey, Wax and Royal jelly.
- Preparation of Bio-pesticides (plant based), Organic manures (composts) and Vermicomposting.

AGRICULTURE
CLASS XII
(PRACTICAL)

One Practical Paper

30 Marks

Time: 3 Hours

Section	Titles	Marks
I	Advanced Crop Production and Organic Farming	08
II	Post-Harvest Management, Food Processing and Value Addition	06
III	Subsidiary Enterprises in Agriculture	06
IV	Collection and Visit Report	05
V	Viva Voce	05
Total		30

SECTION: I

Unit I: Advanced Crop Production and Organic Farming

- (a) Soil sampling and determination of Soil pH.
- (b) Determination of soil organic carbon content.
- (c) Preparation of nursery and seed beds.
- (d) Seed treatment with fungicides and Bio-fertilizers.
- (e) Identification of different types of chemical fertilizers, composts, bio-fertilizers.
- (f) Calculation of fertilizer requirement of crops (for wheat, rice and maize) based on their nutrient needs.
- (g) Preparation of FYM and Compost.
- (h) Calibration & dusters for pest control.
- (i) Determination of moisture content of crop seeds (wheat, rice, maize and mustard).
- (j) To find out 100-grain weight of crop seeds (wheat, rice, maize and mustard).
- (k) Visit to a crop field and compare healthy plant with a diseased and insect affected plant.
- (l) Calculation of different types of Insecticides, Fungicides and Herbicides.

SECTION: II

Unit II: Post-Harvest Management , Food Processing and Value Addition

- (a) Visit to Bakery Unit, Local Chakki.
- (b) Preparation of Jam, Jelly, ketchup and Morabba
- (c) Drying of fruits, vegetables and flowers.
- (d) Preparation of pickles.
- (e) Identification of fresh and aged vegetables and fruits.
- (f) Visit to cold storage and record the storage of various fruits and vegetables.
- (g) Harvesting and packaging of flowers.
- (h) Preparation of flower arrangements such as garland and rangoli.
- (i) Visit to a flower mandi and record the activities in the mandi.
- (j) Visit to a local fruit market and record the activities in the market.

SECTION: III

Unit III: Subsidiary Enterprises in Agriculture

- (a) Preparation of plant based bio-pesticides (neem)
- (b) Visit to Mushroom production unit.
- (c) Visit to nearby apiary and record the process of beekeeping.
- (d) Observe the characteristics of different bee products (honey and wax).
- (e) Visit to a vermicomposting unit.
- (f) Observe the characteristics of compost.

Notes:

- 1) The students have to prepare a report on the visits recording their observations on the subject.
- 2) In case of practical of fruit and vegetable preservation and methods of production of value added products from fruits and vegetables, the student will have to write the procedure adopted and the necessary precautions to be taken in the answer sheet provided.

SECTION – IV

Report on the Visits

The student have to prepare a report of their visit to different organizations and submit to Subject teacher for the evaluation. The report must contain the student's original work and observations.

SECTION – V

Viva Voce

Students can be asked questions based on:

- (i) Identification of objects.
- (ii) Visit Report analysis.
- (iii) Experiences in their field visits, etc.

A range of 5 to 10 questions can be asked depending on the response of the student. Evaluation $5 \times 1 = 5$ Or should be based on number of questions answered. Evaluator should stick to the time and $\frac{1}{2} \times 10 = 5$ number of questions.

PRESCRIBED TEXT BOOKS FOR CLASSES XI AND XII:

1. Handbook of Animal Husbandry
Published by : Directorate of Information and Publications of Agriculture, Indian Council of Agricultural Research, Krishi Anusandhan Bhavan, Pusa, New Delhi – 110012.
2. A Text Book of Animal Husbandry by G.C. Banerjee
Published by Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi.
3. Hand Book of Agriculture – ICAR publication
or
Hand Book of Agriculture by S.C. Panda,
Published by : J.V. Publishing House, Jodhpur.
4. A text book of Plant Breeding by Purohit & Purohit,
Published by : J.V. Publishing House, Jodhpur.
5. A text book of Genetics by Purohit & Purohit,
Published by : J.V. Publishing House, Jodhpur.
6. A text book of Production Technology of fruits crops by Prasad & Raju,
Published by : J.V. Publishing House, Jodhpur.
7. A text book of Production Technology of Vegetables & Flowers by Prasad , Raju & Bhardwaj,
Published by : J.V. Publishing House, Jodhpur
8. A text book of Field Crops by Mukund Joshi,
Published by : PHI Learning Private Ltd., Delhi.
