13. AGRICULTURE (Code No. 068)

Agriculture has been the prime enterprise for the National Economy of this country for centuries and that is why India is called Agrarian country. This sector also provides maximum employment to the people of this country. Agriculture is the production of food and fiber, ever since its advent. It has undergone several paradigm changes. The major landmark in Agriculture happened during 1960s when the country witnessed Green Revolution. which boosted the crop production. Use of short duration crop varieties, fertilizers, pesticides and agricultural tools and expansion of area under irrigation were important interventions brought in Agriculture. Livestock is an integral part of Agriculture in India. Their by-products are used to build and maintain soil fertility along with plant protection. The animal products such as meat, milk and eggs are the source of nutrients in human diet as well.

Several emerging dimensions of contemporary Agriculture such as organic agriculture and animal husbandry practices are now getting attention. Food processing, value addition and preservation have been the focus of policies formation in recent times which are helpful in minimizing the wastage in Agriculture. This is helping in better income realizing through marketin of value added products. The income from Agriculture can also be increased by associating in subsidiary enterprises such as mushroom production, bio-pesticides, bee-keeping, vermi-culture etc.

Objectives:

The board objectives of teaching Agriculture at Senior Secondary level are:

- To help the students to comprehended the facts and importance of Agriculture.
- To expose the students to crop production, animal husbandry, horticulture etc.
- To familiarize the students with waste management and physical environment in Agriculture.
- To expose the students to find better income and avenue generating avenues of agriculture and its associated activities.

CLASS XI (2017-18)
(THEORY)

One Theory Paper **70 Marks**

Unit wise Weightage **Time: 3 Hours**

Section	Units	No. of periods	Marks
I.	**Agriculture and Crop Production**		
Part A	• Unit: I: Scope and Importance • Unit: II: Physical Environment • Unit: III: Agriculture Economics and Crop Production	5 40 40	30
Part B	**Genetics and Plant Breeding** • Unit: IV Genetics and Plant Breeding	**30**	**15**
II	**Livestock Production** • Unit V: Scope and Importance • Unit VI: Care and Management • Unit VII: Bio-waste Management and Goverment Schemes	 **10** **40** **05**	**25**
III	**Practical**	**50**	**30**
	Total	**220**	**100**

SECTION - I

PART A - AGRICULTURE AND CROP PRODUCTION: Total Periods -85

Unit I: Scope and Importance: **05 Periods**

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

Unit II: Physical Environment: **40 Periods**

1. Climate and Weather, elements of Weather: Rainfall, Temperature, Humidity, Wind, Sunshine, Climate Change and Global warming. Introduction to various meteorological equipments.
2. Soil, Soil texture and structure and its types, distribution and area.
3. Soil erosion and Soil conservation. Reclamation of problematic soils acidic and alkali.
4. Tillage definition and types. Concept of conservation and tillage.

Unit III: Agriculture Economics and Crop Production **40 Periods**

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, intercultural operations, yield and marketing for Rice, Wheat, Maize, Mustard, Sunflower, Soyabean, Groundnut, Black gram, Red gram, Pea, Jute, Sugarcane, Sorghum, Pearl millet and Finger millet.

3. Package of practices of fruits: Mango, Banana, Guava, Lime, Grape, Apple, Pomegranate. Vegetables: Potato, Tomato, Cauliflower, Cabbage, Spinach, Brinjal, Bottle gourd, Pumpkin, Cucumber. Flower- Rose, Gladiolus, Marigold.
4. Types of seed-foundation and certified and methods of plant propagation – Layering and Cutting, and Tissue culture.
5. Important farm implements and their general maintenance.

PART B - GENETICS AND PLANT BREEDING — 30 Periods

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. Illustrative depiction of the Mendel's experiments, their importance in plant breeding.

SECTION - II: Livestock Production — Total Periods: 55

Unit V: Scope and Importance — **10 Periods**

(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 — **40 Periods**

(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 animals.

(e) Management of calves, bullocks, pregnant and milch animals as well as chicks and layers.

(f) Production of milk and eggs.

(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. Value added products from milk.

(i) Principles of disease manangement and vaccination.

(i) 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 **05 Periods**

(a) Utilization of animals in Bio-wastes and Biogas plant

(b) Important government schemes for development of livestock dairy and pourity in India. Their important features and eligibility criteria.

AGRICULTURE (Code No. 068)
CLASS XI (PRACTICAL) 2017-18

One Paper **30 marks**

Unit wise weightage **Time: 3 hours**

Section	Units	No. of periods	Marks
I	Part A-Agriculture and Crop Production	30	12
	Part B- Genetics, Plant Breeding and Microbiology	--	--
II	Livestock practical	20	08
	Reports of the visit		**05**
	Viva voce		**05**
	Total	**50**	**30**

SECTION - I

Part A - Agriculture and Crop Production

1. Agriculture and Crop Production - Practical

(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 atleast 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 wheat 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 wheat crop seed in the bed.

SECTION – II

2. Livestock - Practical

(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.

AGRICULTURE (Theory) (Code No. 068)
DESIGN OF THE QUESTION PAPER
CLASS – XI 2017-18,

Time: 3 hrs. **Marks: 70**

S. No.	Typology of Questions	Learning Outcomes & Testing Skills	Very Short Answer - 1 Mark	Short Answer-I 2 Marks	Short Answer-2 3 Marks	Long Answer 5 marks	Marks	%
1	**Remembering- (Knowledge based** Simple recall questions, to know specific facts, terms, concepts, principles, or theories, Identify, define, or recite, information); **Map skill based questions (Identification, location)**	• Reasoning • Analytical Skills	3	1	1	1	13	19%
2	**Understanding- (Comprehension** –to be familiar with meaning and to understand conceptually, interpret, compare, contrast, explain, paraphrase information)		3	1	3	2	24	34%
4.	**Application** (Use abstract information in concrete situation, to apply knowledge to new situations; Use given content to interpret a situation, provide an example, or solve a problem)		2	-	2	2	18	26%
5	**High Order Thinking Skills (Analysis & Synthesis-** Classify, compare, contrast, or differentiate between different pieces of information; Organize and/or integrate unique pieces of information from a variety of sources)		-	1	1	1	10	14%
6	**Evaluation-** (Appraise, judge, and/or justify the value or worth of a decision or outcome, or to predict outcomes based on values)		1	2	-	-	5	7%
TOTAL			9x1=9	5x2=10	7X3=21	6X5=30	70	100%

Note: No Chapter wise weightage, care should be taken to cover all chapters.