

**(Job role: Diary Farmer/ Entrepreneur)**

**Class XI**

**SCHEME OF UNITS**

Class XI

Paper-I

<b>Part</b>	<b>Units</b>	<b>No of hours for Theory and Practical</b>	<b>No of marks for Theory and Practical =100</b>
<b>Part A</b>	<b>Employability skills</b>		
1	Communication Skills	28	04
2	Self-management Skills	28	04
3	Information Communication Skills (Part A)	16	02
	<b>Total</b>	<b>72</b>	<b>10</b>
<b>Part B</b>	<b>Vocational skills</b>		
6	Introduction to Dairy Farming	36	08
7	Prepare and Maintain Livestock Accommodation	72	12
	<b>Total</b>	<b>108</b>	<b>20</b>
<b>Part C</b>	<b>Practical work</b>		
	Practical Examination	06	15
	Written Test	01	10
	Viva Voce	03	10
	<b>Total</b>	<b>10</b>	<b>35</b>
<b>Part D</b>	<b>Project Work/Field Visit</b>		
	Practical File/Student Portfolio	10	10
	Viva voce	05	05
	<b>Total</b>	<b>15</b>	<b>15</b>
<b>Part E</b>	<b>Continuous and Comprehensive Evaluation (CCE)</b>		
	<b>Total</b>	<b>5</b>	<b>20</b>
	<b>Grand Total</b>	<b>210</b>	<b>100</b>

# Dairy Farmer/Dairy Entrepreneur

## SCHEME OF UNITS

Class XI

Paper-II

Part	Units	No of hours for Theory and Practical	No of marks for Theory and Practical =100
<b>Part A</b>	<b>Employability skills</b>		
1	Information Communication Skills (Part B)	16	02
2	Entrepreneurial skills	28	04
3	Green skills	28	04
	<b>Total</b>	<b>72</b>	<b>10</b>
<b>Part B</b>	<b>Vocational skills</b>		
6	Establishing Livestock within Accommodation	30	6
7	Providing feed and water for Livestock	38	7
8	Forage Conservation	40	7
	<b>Total</b>	<b>108</b>	<b>20</b>
<b>Part C</b>	<b>Practical work</b>		
	Practical Examination	06	15
	Written Test	01	10
	Viva Voce	03	10
	<b>Total</b>	<b>10</b>	<b>35</b>
<b>Part D</b>	<b>Project Work/Field Visit</b>		
	Practical File/Student Portfolio	10	10
	Viva voce	05	05
	<b>Total</b>	<b>15</b>	<b>15</b>
<b>Part E</b>	<b>Continuous and Comprehensive Evaluation (CCE)</b>		
	<b>Total</b>	<b>5</b>	<b>20</b>
	<b>Grand Total</b>	<b>210</b>	<b>100</b>

## (Paper-I)

### Part B: Vocational Skills

S.No.	Units	Duration(Hrs)
1	Introduction to Dairy Farming	36
2	Prepare and maintain livestock accommodation	72
	Total	108

#### Unit:1 Introduction to Dairy Farming

Learning Outcome	Theory	Practical	Duration (36 Hrs)
1. Understand role of a dairy farmer	Dairy Farming in India Importance of Dairy Farming Employment potential of Dairy Sector in India Per capita availability of milk in India and world Species-wise milk production in India	Since the unit is purely theoretical, students should be given paper - pencil tests of multiple choice, fill in blanks, true/ false etc.	6
2. Understand the different indigenous and exotic breeds	Important breeds of cattle and buffaloes Concept of Indian and exotic breeds Economic importance of various cattle & buffalo breeds Variations in milk yield of different breeds.	Identification of different external body parts in cattle and buffaloes. Habitat and characteristics of major cattle and buffalo breeds in India.	8
3. High milk yielding breeds of cattle and buffaloes	High milk yielding Indian cattle and buffalo breeds viz. Jersey, Holstein Friesian, Gir, Sahiwal, Tharparkar, Mehasana, Murrah and other State breeds. Different exotic breeds of cattle.	Visit to dairy farm for identification of various breeds of cattle and buffaloes	8
4. Selection of cattle and buffaloes	Selection as a time honored technique for improvement of livestock. Conservation of native germ plasm. Recent increased attention to this technique for improvement of indigenous breeds of cattle and buffaloes.	Explain key differences in the technique of selection and cross breeding in various breeds of livestock	6
5. Differentiate between healthy and sick animals	Concept of health in farm animals. Differentiate between healthy and sick animals. Losses in farm production due to animal sickness	Different signs of healthy and sick animals	8
<b>Total</b>			<b>36</b>

## Unit:2 Prepare and maintain livestock accommodation

Learning Outcome	Theory	Practical	Duration (72 Hrs)
1. Understand the accommodation needs of livestock	Basics of animal housing. Importance and need of livestock housing. Key aspects of animal housing.	Visit to Dairy farm to understand the need for livestock housing.	10
2. Understand the different types of accommodation	Various types of animal accommodation such as loose housing and conventional type of housing, single row, double row, head to head and tail to tail type etc. Suitability of different housing systems for different animal species and various life stages of animals.	Calculate the floor space requirement for cattle and buffaloes. Calculate resting area for given number of animals	18
3. Benefits of loose housing over conventional system of housing	Benefits of tail to tail and head to head type of housing system. Benefits of loose housing over conventional system of housing cattle.	Draw an outline of tail to tail and head to head system of housing. Prepare a layout plan for a large dairy farm of 100 animals	12
4. Recognise and use of tools/ equipment	Equipment and machinery required for livestock housing. Equipment and machinery required for dairy section, feed processing and fodder production	Common machinery and equipments used in a dairy farm. Prepare a routine of dairy activities to be undertaken at the dairy farm (Daily/Monthly/Quarterly)	10
5. Understand the different methods of waste handling/ management	Disposal of waste materials. Methods of disposal of solid and liquid manure. Collection of manure and washing. Efficient ways of disposal and utilization of manure. Area for disposal of manures. Manure pits.	Calculate the manure output in Kg/day in case of cattle, buffalo, sheep and goat. Calculate how much time a dairy schedule of operations at a dairy farm is consumed in handling waste and general cleaning at the farm	10
6. Plan and follow the routine cleaning of animal sheds	Different type of sheds and barns / parlour at a dairy farm like milking animal sheds, milking parlour, utility room, suckling calves room, calving box, dry animal shed, calf shed etc. Benefits of vermi-composting.	Monitor regular disposal of animal waste and other wastes as per prescribed procedures Preparation of vermin-compost in your school	12
<b>Total</b>			<b>72</b>

## Dairy Farmer/Dairy Entrepreneur

### (Paper-II)

#### Part B: Vocational Skills

S.No.	Units	Duration(Hrs)
1	Establishing livestock within accommodation	30
2	Providing feed and water for livestock	38
3	Forage conservation	40
	Total	108

#### Unit:1 Establishing livestock within accommodation

Learning Outcome	Theory	Practical	Duration (30 Hrs)
1. Understand the requirement of suitable personal protective equipments while establishing livestock in accommodation	Need for personal protective equipments (PPE) for dairy farmer. Common PPE used at a dairy farm	Identification and use of different personal protective equipments	6
2. Check the suitability of environmental conditions for establishing livestock within it	Appropriate livestock accommodation required for each type of animal Establishing suitable environmental condition in a dairy farm. Cause of stress and minimizing stress in dairy animals	Visit to dairy farm and check if equipment, materials and accommodation are suitable for reception Record suitable environmental conditions like temperature, humidity etc. at the dairy farm	7
3. Proper handling to minimize stress during transportation	Settlement of animals in a new place Transportation of dairy animals by foot, road, rail, ship and air.	Specify maximum daily distance for transporting animal by foot, road, rail, ship and air.	4
4. Understand and follow the safety procedures while establishing livestock for accommodation	Effects of different cleaning methods and materials on the health and well-being of animals. Standard practice for maintaining health of cattle. Vaccination and schedule of vaccination for cattle.	Monitor the livestock carefully to ensure their ongoing health and welfare is maintained	6
5. Ensure cleanliness and follow proper method of waste disposal	Hygienic standards, disinfectants, cleaning techniques, agents and equipments/materials	Visit to dairy farm and observe how to clean animal housing areas, floors etc. Monitor regular disposal of animal waste and other waste as per prescribed procedures	7
<b>Total</b>			<b>30</b>

## Unit:2 Providing feed and water for livestock

Learning Outcome	Theory	Practical	Duration (38 Hrs)
1. Understand the feed composition and quality	Types of animal feed stuffs. Characteristic of good animal feed. Measuring the quality of animal feed.	Explain the concept of partitioning of feed stuffs into CF, TDN and additives	8
2. Understand the nutrient requirements for animals	Concept of total digestible nutrients (TDN). digestible crude protein (DCP) and feed requirement of dairy animals Feeding of dairy animals Feed requirements based on thumb rule method. Feed requirements for various stages of production. Feed requirements based on scientific feeding standards	Calculate TDN of given feed stuff. Formulate balanced ration using given feed stuff by thumb rule Formulate ration for pregnant, lactating animal and growing calf	7
3. Identify and procure the inputs required for the feed preparation	Preparation of animal feed. Major ingredients for feed preparation. Average nutritive values of common feeds/fodders.	Enlist major categories of feed ingredients used for preparation of ration. Identify concentrate feed, green fodders and straw.	7
4. Arrange for various feed and feed supplements essential for animal nutrition and growth 5. Follow the feeding chart and store feed appropriately	Feed supplements for optimum growth and production. Safe and scientific storage of animal feeds. Procurement, checking and receiving of animal feed in dairy farm.	Enlist different feed supplements essential for animal nutrition and growth. Identification and use of given feed supplement. Visit to dairy farm feed storage structure.	5
6. Prepare feed with mixture of right components or procuring quality compound feed from suppliers	Advantages of preparing concentrate mixture at farm level. Preparation of feed at farm by the dairy farmer. Composition of concentrate mixture. Steps in preparing the concentrate mixture at farm level	Give the flow chart for preparation of concentrate mixture at farm level. List the basic equipment/ machines required for preparation of concentrate mixture	5
7. Provide the feed and water to cattle	Maintaining and monitoring feed and water supply to dairy animals. Water requirement of dairy animals. Broad plan for ensuring availability of feed, fodder and water. Salient aspects of planning feed and water supply.	Calculate the water requirement in a farm for 100 dairy cows. Give a broad plan to ensure regular supply of water to dairy animal	3
8. Understand wastage	Causes of feed wastage and measures to minimize it.	List various causes of wastage of feed and	3

minimization	Structures for storage of feeds. Maintaining feed inventory	measured to minimize them	
<b>Total</b>			<b>38</b>

### Unit:3 Forage conservation

Learning Outcome	Theory	Practical	Duration (40 Hrs)
1. Gain knowledge about different fodder crops	Fodder crops for dairy animals. Types of cultivated fodder based on season and amount of crude protein. Common fodder crops grown in India	List different fodder crops. Identify fodders belongs to Kharif, Rabi and Zaid category. Identity fodders belong to leguminous and non-leguminous type.	8
2. Understand the right time of harvesting of crops	Harvesting of fodder crops. Methods of harvesting and time of harvesting	Explain the stage at which the fodder crops of Jowar, Bajra, Cowpea, Maize, Berseem etc. are harvested	7
3. Identify and use the tools and equipment for preparation of forages	Equipments and machines used for preparation of forage.	List the different equipments and machineries for preparation of forages.	6
4. Understand the methods of forage conservation - hay making, silage preparation, chemical treatment etc.	Conservation of forages. Favourable condition for forage conservation. Methods of forage conservation.	Visit to dairy farm to observe different methods of forage conservation.	8
5. Judging the quality of conserved forage and ways to minimize environmental impact	Judging the quality of conserved forage. Methods for judging quality of conserved silage. Methods for judging quality of conserved hay. Proper disposal of waste and debris	Judging the quality of given sample of silage/hay.	7
6. Assessing the requirements of conserved fodder	Factors influencing the requirement of fodder at a farm.	Calculate the annual conserved fodder requirement for a farm of 100 cattle.	4
<b>Total</b>			<b>40</b>

Reference: Dairy Farmer–I and II , Published by NCERT, NewDelhi

# Council of Higher Secondary Education, Odisha

## Dairy Farmer/Dairy Entrepreneur

### Class-XII

### (Paper-I)

#### Part B: Vocational Skills

S.No.	Units	Duration(Hrs)
1	Maintain Healthy Performance of Livestock	68
2	Performing Hand and Machine Milking	40
	Total	108

#### Unit:1 Maintain Healthy Performance of Livestock

Learning Outcome	Theory	Practical	Duration (68 Hrs)
1. Understand the healthy animal parameters.	1.Signs of healthy and unhealthy animals.	1.Compare healthy and unhealthy animal on various parameters. 2. Visit to dairy farm for comparison of healthy and unhealthy animals.	6
2. Treat animals as per animal welfare regulations.	1. Concept of wellbeing of animals 2. Concept of animal welfare 3. Animal welfare regulations	1. Explain the difference between animal wellbeing and animal welfare 2. Visit to dairy farm to explain to the students the various wellbeing and welfare measures being adopted for the animals 3. Explain the five basic freedoms for livestock animals	6
3. Monitor the physical condition of the animals at suitable intervals, and recognize, record	1. Routine monitoring and reporting of physical condition of the animals 2. Abnormal behaviour of dairy animals	1. List the various aspects of routine monitoring of physical conditions of animals 2. List the common vices and abnormal behaviours in farm animals	6



and report any abnormal signs			
4. Check livestock for presence of external & internal parasites and to know about common diseases of dairy cattle.	<ol style="list-style-type: none"> <li>1. Importance of external &amp; internal parasites</li> <li>2. Effects of external &amp; internal parasites on animals</li> <li>3. Prevention of external &amp; internal parasites</li> <li>4. Treatment and control of external &amp; internal Parasites</li> <li>5. Symptoms, treatment and control of common diseases of dairy cattle</li> </ol>	<ol style="list-style-type: none"> <li>1. Visit to dairy farm for observing animals infested with external &amp; internal parasites and how they are controlled</li> <li>2. Visit to dairy farm for observing some common diseases of dairy cattle, their symptoms, treatment and control measures</li> </ol>	10
5. Understand the health maintenance procedure of livestock	<ol style="list-style-type: none"> <li>1. Management interventions to maintain health and productivity of livestock</li> </ol>	<ol style="list-style-type: none"> <li>1. List the important management interventions to maintain health and productivity of livestock</li> </ol>	6
6. Understand the pregnancy in farm animals	<ol style="list-style-type: none"> <li>1. Heat detection techniques</li> <li>2. Artificial Insemination (AI)</li> <li>3. Diagnosis of pregnancy and management of pregnant animals</li> </ol>	<ol style="list-style-type: none"> <li>1. Visit to dairy farm to understand management of animals in heat</li> <li>2. Popular heat detection technique being practiced at dairy farm</li> <li>3. Visit to dairy farm for students to observe the process of AI</li> <li>4. Repeat visit to farm to observe pregnancy in animals</li> </ol>	10
7. Take Care during Pregnancy	<ol style="list-style-type: none"> <li>1. Management of pregnant animals</li> </ol>	<ol style="list-style-type: none"> <li>1. Visit to the dairy farm to help the student understand various aspects of management of pregnant animal such as nutrition, accommodation</li> </ol>	6

		etc.	
8. Understand handling of calves	<ol style="list-style-type: none"> <li>1. Management of calves</li> <li>2. Importance of colostrum feeding</li> <li>3. Substitute for colostrum</li> <li>4. Housing, weaning and feeding schedule of calves</li> <li>5. Composition of calf starter</li> <li>6. Dehorning methods</li> <li>7. Castration of calves</li> </ol>	<ol style="list-style-type: none"> <li>1. Visit to dairy farm to observe management of calves such as housing, hygiene, colostrum feeding etc.</li> <li>2. Prepare substitute for colostrum</li> <li>3. How the student will teach the calf to drink milk</li> <li>4. Give a feeding schedule of calf up to age of 3 months</li> <li>5. Explain advantages of weaning of calves</li> </ol>	12
9. Record the health check up of the animal and treatment provided	<ol style="list-style-type: none"> <li>1. Model format for maintenance of health and treatment of animals</li> </ol>	<ol style="list-style-type: none"> <li>1. Explain the importance of maintenance of health record of animals</li> </ol>	6
<b>Total</b>			<b>68</b>

## Unit:2 Performing Hand and Machine Milking

Learning Outcome	Theory	Practical	Duration (40 Hrs)
1. Understand the pre-milking, milking and post milking activities	<ol style="list-style-type: none"> <li>1. Structure of udder</li> <li>2. Physiology of milk letdown</li> <li>3. Inhibition of milk letdown</li> <li>4. Pre milking activities</li> <li>5. Milking methods</li> <li>6. Post milking Activities</li> </ol>	<ol style="list-style-type: none"> <li>1. Draw outline diagram of mammary gland</li> <li>2. Give the flow chart of milk letdown</li> <li>3. Visit to dairy farm to observe various pre milking, milking and post milking activities</li> </ol>	6
2. Understand the right milking technique	<ol style="list-style-type: none"> <li>1. Methods of milking</li> <li>2. Full hand milking versus stripping and</li> </ol>	<ol style="list-style-type: none"> <li>1. Visit to dairy farm to help the students observe right</li> </ol>	6

	knuckling methods	techniques of milking	
3. Understand the Mastitis disease and precautions to be taken	<ol style="list-style-type: none"> <li>1. Mastitis and its importance</li> <li>2. Mastitis detection methods</li> <li>3. Control and prevention of mastitis</li> </ol>	<ol style="list-style-type: none"> <li>1. Differentiate between clinical and subclinical mastitis</li> <li>2. Visit to dairy farm to observe various mastitis detection methods</li> <li>3. Visit to dairy farm to observe precautions taken for mastitis</li> </ol>	8
4. Identify and use the milking machine and equipment	<ol style="list-style-type: none"> <li>1. Parts of milking machine and their functions</li> </ol>	<ol style="list-style-type: none"> <li>1. Visit to dairy farm to observe various equipment of a milking machine</li> </ol>	6
5. Understand the adjustments of the machine and equipment	<ol style="list-style-type: none"> <li>1. How milking machine works</li> </ol>	<ol style="list-style-type: none"> <li>1. Visit to dairy farm to observe parts of the milking machine and their functions</li> </ol>	6
6. Follow procedure for clean milk production	<ol style="list-style-type: none"> <li>1. Sources of contamination in milk</li> <li>2. Steps of clean milk production</li> </ol>	<ol style="list-style-type: none"> <li>1. List the various sources of contamination of milk</li> <li>2. List the steps of clean milk production during : <ol style="list-style-type: none"> <li>a) Before milking</li> <li>b) During milking</li> <li>c) After milking</li> </ol> </li> </ol>	8
<b>Total</b>			<b>40</b>

# Dairy Farmer/Dairy Entrepreneur

## Class-XII

### (Paper-II)

#### Part B: Vocational Skills

S.No.	Units	Duration(Hrs)
1	Entrepreneurship	76
2	Maintain Health and Safety at the Workplace	32
	Total	108

#### Unit:1 Entrepreneurship

Learning Outcome	Theory	Practical	Duration (76 Hrs)
1. Understand the dairy farming economics and finance	1. Laws of dairy economics 2. Entrepreneurship opportunities in dairy sector 3. Peculiar economic facts in dairy sector 4. Factors influencing economics of dairy farming	1. Explain the areas in which an entrepreneur needs help after completion of training	12
2. Collect information on financing institutions for dairy farming	1. Institutional finance for dairy farming 2. Common lending terms and conditions of financial institutions	1. Explain the concept of Net present Value (NPV), Internal Rate of Return (IRR), Benefit Cost Ratio (BCR) and Profitability ratio (PR)	12
3. Estimate the budget for dairy farming	1. Planning a dairy business	1. Prepare a business plan for starting a dairy farm of 10 animals	10
4. Understand and update the market information	1. Market information updates with special focus on e-marketing 2. Importance of market information of inputs and outputs	1. Prepare a report of quarterly fluctuations in major inputs and outputs in dairy sector	10
5. Manage the records of the Business	1. Importance of record keeping	1. Use the dairy farm records in the preparation of a project for loan for dairy farm for 10 cattle	10

6. Understand the method of marketing	1. Marketing of milk and milk products	1. Enumerate the different ways of marketing of milk	12
7. Develop contact with market players	1. Developing confidence with other market players	1. Enumerate the clients of a dairy farm	10
<b>Total</b>			<b>76</b>

## Unit:2 Maintain Health and Safety at the Workplace

Learning Outcome	Theory	Practical	Duration (32 Hrs)
1. Maintain a clean & efficient workplace	1. Importance of cleanliness and hygiene at the work place 2. Safe handling of equipment and animals	1. Explain the various handling risks	10
2. Render appropriate emergency measures	1. Prevention of transmission of infectious diseases and first aid measures 2. First aid measures in instances of poisoning, sunstroke, electrocution, burn injuries and prolapse of uterus etc. in dairy animals	1. Prepare potassium permanganate solution 2. Explain first aid to be given to animal in cases of electrocution, poisoning, burning and accidental emergency	12
3. Practice General safety and first aid	1. First aid for dairy animals 2. Maintaining hygiene and bio security at dairy farm, and disposal of carcass	1. Suggest the items for a first aid kit for dairy animals 2. List out the important methods of disposal of carcass	10
<b>Total</b>			<b>32</b>

Reference books:

Sub-Dairy farmer/Entrepreneur

1. Livestock Production and Management, 6th ed, N S R Sastry & C K Thomas, Kalyani Publishers.
2. Dairy Bovine Production, 2nd ed, C K Thomas, N S R Sastry & G Ravikiran, Kalyani Publishers.
3. A Textbook of Animal Husbandry, 8th ed, G C Banerjee, Oxford Publishers.