

# **ASSIGNMENT BOOKLET**

## **DIPLOMA PROGRAMME IN DAIRY TECHNOLOGY (DDT)**

**Academic Session: 2022**

**(January 2022 and July 2022 sessions)**



**School of Agriculture  
Indira Gandhi National Open University  
New Delhi - 110068**

Dear student,

As you are aware that for theory, the weightage to the term-end examination will be 80% and the weightage to the continuous assessment will be 20%. The continuous assessment is in form of assignments. There is one assignment for each course i.e. total eight assignments for the programme. Each assignment will be of 50 marks which ultimately will be converted to have weightage of 20 % of theory. Instructions to format your assignments are as follows:

### Instructions to format your assignments

Before attempting the assignments, please read the following instructions carefully.

1. On top of the first page of your answer sheet, please write the details exactly in the following format.

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Enrollment no:.....  
Name:.....  
Address:.....  
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Course Code:.....  
Course Title:.....  
Study Centre:..... Date:.....  
(Name and Code)

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**Please follow the above format strictly to facilitate evaluation and to avoid delay.**

2. Use foolscap size paper for writing your answer.
3. Leave 4cm margin on the top, bottom and left of your answer sheet.
4. Clearly indicate question no. and part of the question being solved while writing answers.

Assignment Nos.	Date of Submission	
	January 2022 session	July 2022 session
Assignment 1 (BPVI-011) and 2 (BPVI-012)	30 <sup>th</sup> August 2022 (Before submission of TEE Form)	28 <sup>th</sup> February 2023 (Before submission of TEE Form)
Assignment 3 (BPVI-013) and 4 (BPVI-014)		
Assignment 5 (BPVI-015) and 6 (BPVI-016)		
Assignment 7 (BPVI-017) and 8 (BPVI-018)		

5. Assignments have to be sent to the coordinator of your study centre.
6. **We strongly suggest that you should retain a copy of your assignment responses.**

Wishing you good luck.

**Programme Coordinator**

## **BPVI – 011: MILK PRODUCTION AND QUALITY OF MILK**

**Maximum Marks: 50**

**Note: Attempt all the five questions.**

- 1) a) Discuss the three phases of Operation Flood. Explain its goals and achievements. 5  
b) What role is played by NCDFI and National Milk Grid in the India dairy development? 5
- 2) a) Differentiate between selective breeding and cross breeding. 5  
b) Explain the strategies to improve the quality of milk. 5
- 3) What is two-Axis milk pricing? How is it considered better than other systems? 10
- 4) Define the physico-chemical properties of milk? How knowledge of physico-chemical properties of milk help in effective quality control and processing of milk to different dairy products? 10
- 5) Discuss in detail the factors which influence the growth of micro-organisms. 10

## **BPVI – 012: DAIRY EQUIPMENT AND UTILITIES**

**Maximum Marks: 50**

**Note: Attempt all the five questions.**

- 1) Describe the materials used for the manufacturing of milk processing equipment. 10  
How proper knowledge of equipment is essential to select appropriate size, capacity and the performance and maintenance of these equipment?
- 2) Explain the basic principle and components of a cold storage. What are the considerations in deciding inside conditions of a cold storage? 10
- 3) Discuss in detail the boiler mountings (safety and control) and accessories. 10
- 4) a) What safety precautions are required to prevent electric shock? 5  
b) Describe the working principles of single and three-phase induction motors. 5
- 5) a) What different materials are used for different components of rainwater harvesting system? 5  
b) Explain the working of a rainwater harvesting system. 5

## BPVI – 013: MILK PROCESSING AND PACKAGING

Maximum Marks: 50

Note: Attempt all the five questions.

- 1) a) What considerations are important while planning layout of a milk reception dock? 5
- b) How chilling of milk affects the microbial growth, keeping quality and physico-chemical properties of milk? 5
- 2) Describe the different theories of homogenization of milk. 10
- 3) a) Discuss the different types of packaging material used for fluid milk 5
- b) Write the advantages and disadvantages of distribution of milk in multiple and single use packages. 5
- 4) What considerations are to be kept in mind while choosing an appropriate detergent for cleaning in a food processing factory? What are the qualities a good detergent should have? 10
- 5) List the different types of can washers and explain their working principle. 10

## BPVI – 014: DAIRY PRODUCTS - I

Maximum Marks: 50

Note: Attempt all the five questions.

- 1) a) Discuss the factors influencing fat percentage in cream and fat losses in skim milk. 5
- b) Describe the different processes treatments given to different types of cream. 5
- 2) a) Discuss the different defects of cream and their control measures. 5
- b) In manufacturing of creamery butter, what treatments are given to cream? Discuss these treatments in brief. 5
- 3) Define churning of butter. Explain the different theories of churning. 10
- 4) a) Explain the factors which influence the fat constants of ghee. 5
- b) Give the procedure for AGMARK grading of ghee. Give the AGMARK standard of general and special grade of ghee. 5
- 5) Give the classification, salient features, and ingredients of low-fat spread. 10

## BPVI – 015: DAIRY PRODUCTS - II

**Maximum Marks: 50**

**Note: Attempt all the five questions.**

- 1) a) Explain the method of preparation of Rabri. 5  
b) Describe the factors which affect the shelf-life of heat desiccated products. 5
- 2) a) Discuss the factors which influence the quality of paneer. 5  
b) How the shelf-life of paneer can be extended? 5
- 3) a) Describe the method of manufacturing of sweetened condensed milk. 5  
b) Discuss about non-microbial defects of evaporated milk and their prevention. 5
- 4) a) Write the PFA and BIS standards of malted milk food. 5  
b) Explain the method of manufacture of spray dried milk powder. 5
- 5) a) Describe the quality attributes of dried milk. 5  
b) Discuss the storage defect of dried milk and their preventive measures. 5

**BPVI – 016: DAIRY PRODUCTS - III**

**Maximum Marks: 50**

**Note: Attempt all the five questions.**

- 1) a) Describe the factors affecting fermentation process of a starter culture and the method of preparation of the starter culture. 5  
b) Discuss the method of manufacturing of yoghurt and method of enhancing its shelf-life. 5
- 2) a) Describe the method of manufacture and chemistry of stretch of Mozzarella cheese. 5  
b) How processed cheese is prepared and what are its defects? 5
- 3) a) Describe the role of ingredients and processes treatments in the quality of ice cream. 5  
b) What are ice cream novelties? Give the method of preparation of any one ice cream novelty. 5
- 4) a) Describe the method of preparation of acid and rennet casein. 5  
b) How are whey solids commercially preserved? List the basic steps in the manufacturing of whey powder. 5
- 5) a) Give the composition, nutritive and anti-oxidative properties of ghee residue. 5  
b) Give the main applications of membrane process in dairy industry. 5

**BPVI – 017: QUALITY ASSURANCE**

**Maximum Marks: 50**

**Note: Attempt all the five questions.**

- 1) a) Explain the components of food quality. 5  
b) Describe the scope of the tasks of quality control in dairy industry as outlined in the FAO document. 5
- 2) a) Define HACCP. Write its five preliminary steps and seven principles. 5  
b) Describe the different microbiological tests conducted on milk and milk products. 5
- 3) Define sensory evaluation. Write its importance, uses and requirements. 10
- 4) a) What are the desirable and undesirable attributes of butter and ghee? How sensory evaluation of butter and ghee is done? 5  
b) How packaging material for food is classified? Explain the important properties of aseptic cartons. 5
- 5) a) How are food ingredients classified? Give the BIS standards for food grade  $\beta$ -carotene and saffron. 5  
b) How is purity of sodium alginate evaluated? 5

#### **BPVI – 018: DAIRY MANAGEMENT AND ENTREPRENEURSHIP**

**Maximum Marks: 50**

**Note: Attempt all the five questions.**

- 1) a) Describe the factors which enhance the productivity. How the resources can be optimized for achieving good productivity? 5  
b) Explain the criteria which is adopted in human resource planning. 5
- 2) a) Describe the different types of costing and give the classification of costing. 5  
b) What are the sources of financing the working capital? What are the approaches of managing working capital? 5
- 3) a) What is a cost unit and indicate the factors on which it is dependent? 5  
b) Explain in brief different techniques used for determining the product cost. 5
- 4) a) Describe the main components of a Business Plan. 5  
b) Describe the importance of key factors in managing a business. 5
- 5) a) Describe the basic elements of Programme Evaluation and Review Technique (PERT). 5  
b) Discuss the must-have skills for an entrepreneur. 5