

# **ASSIGNMENT BOOKLET**

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

**Academic Session: 2017**



**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 is of 50 marks. The assignments award 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. The assignment should be written by the students in their own handwriting.

Assignment No.	Date of Submission
Assignment 1 (BPVI-011) and 2 (BPVI-012)	Before 31 <sup>st</sup> October
Assignment 3 (BPVI-013) and 4 (BPVI-014)	Before 31 <sup>st</sup> December
Assignment 5 (BPVI-015) and 6 (BPVI-016)	Before 31 <sup>st</sup> January
Assignment 7 (BPVI-017) and 8 (BPVI-018)	Before 28 <sup>th</sup> February

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.

**Assignment – 1**  
**Course Code: BPVI – 011**

**Maximum Marks – 50**

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

- Q.1. (a) State major objectives of the National Dairy Development Board (NDDB). Describe goals and major achievements of the Operation Flood (OF) Programme. 5
- (b) What are principles and advantages of the “Cooperatives”? Give the salient features of the Anand Pattern of Dairy Cooperatives. 5
- Q.2 (a) Describe salient features of the Scheme “Strengthening Infrastructure for Quality & Clean Milk Production”. 5
- (b) Define breed and describe the general characteristics of Dairy Cattle Breeds. 5
- Q.3. (a) What are the symptoms of heat in cows and buffaloes? Describe artificial insemination (AI). Also give its advantages. 5
- (b) Describe the housing, feeding and milking management practices of lactating cows and buffaloes. 5
- Q.4. (a) Give the composition of cow and buffalo milk. Describe factors affecting composition of milk. 5
- (b) Describe the common preservatives and neutralizers used in the dairy industry. Also give the principle and method of their detection. 5
- Q.5. (a) Describe the microorganisms and pathogens with their generic characteristics which are likely to be present in milk. 5
- (b) Identify natural Inhibitory substances present in milk and describe various methods for preservation of milk and milk products. 5

**Assignment – 2**  
**Course Code: BPVI – 012**

**Maximum Marks – 50**

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

- Q.1. (a) Describe the salient characteristics of material used for fabrication of milk processing equipment. 5
- (b) What is collection centre? Enumerate facilities available at collection centre. Describe milk flow route along with the equipment kept at the reception dock of a dairy plant. 5
- Q.2. (a) Draw and describe the equipment(s) used for pasteurization and sterilization of milk. 5
- (b) Explain the working of a batch and continuous milk evaporator along with the corresponding diagrams. 5

- Q.3. (a) What is a Steam Boiler? Describe principle and working of a steam boiler with the help of a diagram. 5
- (b) Enumerate important energy conservation principles. Describe working of important energy conservation accessories used in a boiler. 5
- Q.4. (a) Describe the principle and working of a three phase induction motor and explain why the single phase motors are not self-start? 5
- (b) Explain working of a vapour compression refrigeration system with the help of a labelled diagram. 5
- Q.5. (a) Describe the purpose and functioning of a chilled water supply system used in a dairy plant. 5
- (b) Write the importance of water conservation in a dairy plant. Explain important components including their materials of construction of a rainwater harvesting system. 5

**Assignment – 3**  
**Course Code: BPVI – 013**

**Maximum Marks – 50**

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

- Q.1. (a) Describe types of milk collection systems existing in our country. Explain points to be considered in laying out milk reception dock. 5
- (b) What are the platform tests conducted on a dairy dock? Name the physical, chemical and microbiological tests that are performed in the laboratory to assess the quality of raw milk. 5
- Q.2. (a) Define UHT milk. What are its advantages and disadvantages? Explain salient features of different types of UHT plants. 5
- (b) What is homogenization? Explain its principle and working with the help of a diagram. Why homogenization is essential in the manufacturing of recombined milk? 5
- Q.3. (a) What is ‘Skimming Efficiency’? Describe the factors affecting the skimming efficiency. How does the fat content and temperature of feed milk influence the richness of cream during separation? 5
- (b) Describe the salient features of different packaging systems and materials used for packaging of fluid milk. 5
- Q.4. (a) What is ‘Standardization of Milk’? Give flow diagram for preparation of toned and flavoured milk. 5
- (b) Describe the principle of washing cans effectively. Write various steps required in the operation of a straight through can washer. 5
- Q.5. (a) What are the main considerations and precautions in using sanitizers? Explain the characteristics of a good quality detergent for a dairy plant 5
- (b) Describe the principle and various steps involved in “Cleaning-in-Place” process. How sanitization process is carried out for milk pasteurizer and milk silos under the CIP? 5

**Assignment – 4**  
**Course Code: BPVI – 014**

**Maximum Marks – 50**

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

- Q.1. (a) State the difference between mechanical separation and gravity separation. List the factors affecting fat loss in skim milk. 5
- (b) Describe the steps with flow diagram and processing parameters involved in manufacture of sterilized cream. 5
- Q.2. (a) Define churning and explain theories of churning. 5
- (b) Describe the steps with flow diagrams and processing parameters involved in making creamery butter from milk. 5
- Q.3. State common defects occurring in sterilized cream and butter. Also describe the control for these defects. 10
- Q.4. (a) What is the principle of manufacture of *Ghee*? List different method of manufacturing of *Ghee* and describe the creamery butter method in detail. Give procedure for the AGMARK grading of *Ghee*. 5
- (b). Differentiate between *Ghee* and Butter oil. Define analytical constants of *ghee*. Which analytical constants of *Ghee* are most affected in the cotton tract regions? 5
- Q.5. (a) Name the adulterants most commonly used in *Ghee*. Describe the tests used to detect these adulterants. 5
- (b) State the basic principle involved in manufacture of low fat spreads. Describe the procedure for preparation of aqueous and fat phases for spread manufacture. 5

**Assignment – 5**  
**Course Code: BPVI – 015**

**Maximum Marks – 50**

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

- Q.1. (a) Classify traditional dairy products on the basis of their principle of manufacture. Describe different factors which influence the quality and yield of *Khoa*. 5
- (b) Name various *Khoa* based sweets. Describe the method for preparation of *Burfi*. 5
- Q.2. (a) Give compositional differences of *Chhana* made from cow and buffalo milk. Explain the factors which influence the quality of *Chhana*. 5
- (b) Enlist the factors affecting the quality of *Paneer*. How the shelf life of *Paneer* can be extended? 5

- Q.3. (a) Explain the process and steps involved in the manufacture of Evaporated Milk (EM). 5  
 (b) What are the common defects of Concentrated Milk? Give their causes and their preventive measures. 5
- Q.4. (a) Describe the method of manufacture of Spray Dried Milk Powder. 5  
 (b) What is Malted Milk Food? Describe its method of manufacture. 5
- Q.5. (a) Write quality attributes and common defects of dried milk powders. 5  
 (b) What is Infant Food? Describe the virtues of human milk. 5

**Assignment – 6**  
**Course Code: BPVI – 016**

**Maximum Marks – 50**

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

- Q.1. (a) What is starter culture? Describe the role of starter culture in manufacturing of fermented dairy products. What are the characteristics of a good starter culture? 5  
 (b) Describe the method of manufacturing of *Dahi* and flow diagram for preparation of *Lassi*. 5
- Q.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
- Q.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 for preparation of *Kulfi* and *Malai ka baraf*. 5
- Q.4. (a) Explain the principles and methods of preparation of Acid and Rennet Caseins. 5  
 (b) Give the composition of Whey and the basic steps involved in manufacturing of Whey Powder. 5
- Q.5. (a) Give the composition, nutritive and anti-oxidative properties of *Ghee* Residue. 5  
 (b) What is membrane processing? Give its advantages, and also give the main applications of membrane processing in the dairy industry. 5

**Assignment – 7**  
**Course Code: BPVI – 017**

**Maximum Marks – 50**

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

- Q.1. (a) Why quality aspects are important in reference to milk and milk products? 5  
(b) What are the different sources of milk infection? 5
- Q.2. (a) Describe quality control management system and its implementation. 5  
(b) What do you understand by HACCP? Write its five preliminary steps and seven principles. 5
- Q.3. (a) Describe different microbiological tests conducted on milk and milk products. 5  
(b) Write the salient features of Food Safety and Standards Act, 2006. 5
- Q.4. (a) What are the important groups of plastic materials used in packaging? 5  
(b) Give the procedure for estimating fat in milk by Gerber method and SNF through lactometer. 5
- Q.5. (a) Explain role of primary senses in judging dairy products. 5  
(b) List the most common flavour defects of milk and dairy products and write one main cause of the each. 5

**Assignment – 8**  
**Course Code: BPVI – 018**

**Maximum Marks – 50**

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

- Q.1. (a) What are planning considerations you will keep in mind for the design and layout of a dairy plant? 5  
(b) What do you understand by the term “Milk Losses”? How monitoring and control of milk losses can be done in a dairy plan? 5
- Q.2. (a) What do you understand by the term account, accounting and accountancy? Describe the generally accepted principles of accountancy. 5  
(b) What are various sources of financing the working capital? Describe the approaches of managing working capital? 5
- Q.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
- Q.4. (a) Describe the main components of a Business Plan. 5  
(b) Describe the importance of key factors in managing a business. 5
- Q.5. (a) Describe the basic elements of Programme Evaluation and Review Technique (PERT). 5  
(b) Explain the must have skills for an entrepreneur. 5