

# **ASSIGNMENT BOOKLET**

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

**Academic Session : 2019**



**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.

---

Enrollment no:.....  
Name:.....  
Address:.....  
.....  
.....

Course Code:.....  
Course Title:.....  
Study Centre:..... Date:.....  
(Name and Code)

---

**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 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) Outline the dairy development in India from 1970 onwards and what has been the role of NDDB in it? 5
- (b) Describe the advantages of cooperative system and explain Anand pattern of cooperative societies. 5
- Q.2 (a) Explain the differences between selective breeding and cross breeding. How cross breeding has helped in improving the performance of non-descriptive cattle with respect to milk production? 5
- (b) Explain the significance of clean milk production and strategies to improve the quality of milk. 5
- Q.3. (a) Describe different methods of milk procurement along with merits and demerits of each. 5
- (b) What are different criteria of milk payment and which of these is the best and why? 5
- Q.4. What do you understand by physico-chemical properties of milk? How knowledge of physico-chemical properties of milk helps in effective quality control and processing of milk to different dairy products? 10
- Q.5. (a) Describe different factors which increase the growth of microorganisms in milk. 5
- (b) Explain how microbial spoilage of milk can be controlled. 5

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

**Maximum Marks – 50**

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

- Q.1. (a) What is the importance of preventive maintenance and what it involves? What should be recorded in equipment data sheet? 5
- (b) What type of materials are required for fabrication of dairy equipment? Make a product flow line diagram for a dairy plant receiving 10,000 litre milk and manufacturing market milk and butter. 5
- Q.2. Describe the basic principles and components of refrigeration system. 10
- Q.3. Describe in detail the boiler mountings (safety and control) and accessories. 10

- Q.4. (a) What safety precautions are required to prevent electric shock and how first aid is given to a victim of electric shock? 5  
 (b) Describe the working principles of single and three phase induction motors and explain why the single phase motors are not self-start? 5
- Q.5. (a) What are the various recharge structures available to recharge rainwater into ground? Explain the working of rainwater harvesting system works? 5  
 (b) Describe aerobic and anaerobic biological treatments for dairy waste water treatment. 5

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

**Maximum Marks – 50**

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

- Q.1. (a) What considerations are important while planning layout of a milk reception dock and what equipment and devices are required at the reception dock? 5  
 (b) How chilling of milk effect the microbial growth, keeping quality and physico-chemical properties of milk? 5
- Q.2. Explain different theories of homogenization and advantages and disadvantages of homogenized milk? 10
- Q.3. (a) Explain creaming and factors affecting the creaming rate. What is creaming efficiency? List the Factors affecting creaming efficiency. 5  
 (b) Explain the difference between recombined and reconstituted milk. Why homogenization is essential in the manufacturing of recombined milk? 5
- Q.4. (a) Describe different methods used in India for the distribution of processed milk. How does packaging in single use containers reduce the work load in a dairy? 5  
 (b) What are the considerations you will keep in mind while selecting an appropriate detergent? 5
- Q.5. (a) What are the main considerations and precautions in using sanitizers? 5  
 (b) What are different types of can washers used in the dairy industry? Describe various steps of “cleaning in place” process. 5

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

**Maximum Marks – 50**

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

- Q.1. (a) Explain different types of cream separators, factors influencing fat percentage in cream and fat losses in skim milk. 5  
(b) What are different types of cream manufactured in a dairy plant? Describe various defects which develop in cream during its storage. 5
- Q.2. (a) Define butter. Explain different churning theories. 5  
(b) Describe different steps involved in making creamery butter from milk. 5
- Q.3. (a) Describe different defects in butter and how these defects can be controlled? 5  
(b) What do you understand by the term Ghee Constants? Describe different factors affecting composition and analytical constants of Ghee. 5
- Q.4. (a) What is the principle of manufacture of ghee? List different method of manufacturing of ghee and describe the creamy butter method in detail. 5  
(b) Explain grading of Ghee under AGMARK. Also give AGMARK standards of different types of ghee. 5
- Q.5. Define low fat spread. Give the classification, salient features and ingredient of low fat spread. 10

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

**Maximum Marks – 50**

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

- Q.1. (a) Describe different factors which influence the quality and yield of khoa. 5  
(b) Describe the continuous methods of Khoa making with merits and demerits of each. 5
- Q.2. (a) Describe the factors which influence the quality of paneer. 5  
(b) How the shelf life of paneer can be extended? 5
- Q.3. (a) Describe in detail the method of manufacturing of Sweetened Condensed Milk (SCM). 5  
(b) Discuss non-microbial defects of evaporated milk and how these defects can be prevented. 5
- Q.4. (a) Write the specification for Malted Milk Foods given under the FSS Act and BIS. 5

- (b) Describe different steps involved in the spray drying of milk. What is the purpose of condensing and homogenization of milk during the manufacturing of dried milk? 5
- Q.5. (a) Describe the quality attributes of dried milk? 5
- (b) Describe the storage defect of dried milk and their preventive measures. 5

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

**Maximum Marks – 50**

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

- Q.1. (a) Describe the factors affecting fermentation process of a starter culture and method of preparation of the starter culture. 5
- (b) Describe in detail the method of manufacturing of yoghurt and method of enhancing its shelf life. 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. Describe different steps in the manufacturing of ice cream. Explain the role of cooling, ageing and homogenization in the quality of ice cream. 10
- Q.4. (a) Describe the method of preparation of acid and rennet casein and give the uses of casein and caseinates. 5
- (b) How whey solids are commercially preserved? List the basic steps in the manufacturing of whey powder. 5
- Q.5. (a) Give the composition, nutritive and anti-oxidative properties of ghee residue. 5
- (b) Describe the advantages of using membrane processes in place of conventional concentration processes. Give the main applications of membrane process in dairy industry. 5

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

**Maximum Marks – 50**

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

- Q.1. (a) What do you understand by the term “Food Quality”? Explain the components of food quality. 5
- (b) Explain the scope of the tasks of quality control in dairy industry as outlined in the FAO document. 5

- Q.2. (a) What do you understand by HACCP? Write its five preliminary steps and seven principles. 5  
 (b) Describe different microbiological tests conducted on milk and milk products. 5
- Q.3. (a) What are the precautions to be taken while taking sample for microbiological analysis of milk and milk products? 5  
 (b) What are the chemical and microbiological tests generally conducted on raw milk before its acceptance in the dairy plant? 5
- Q.4. (a) What are the desirable and undesirable attributes of butter and ghee? How sensory evaluation of butter and ghee is done? 5  
 (b) Describe different packaging materials of flexible, rigid and semi rigid categories used for dairy products. 5
- Q.5. (a) How food ingredients are classified? Give the BIS standards for food grade  $\beta$  carotene and saffron. 5  
 (b) Give the procedure for estimating fat in milk by Gerber method and SNF through lactometer. 5

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

**Maximum Marks – 50**

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

- Q.1. (a) What are the 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 plant? 5
- Q.2. (a) What do you understand by the term account, accounting and accountancy? Describe all the generally accepted principles of accountancy. 5  
 (b) Why product costing in an organization is important? Describe different types of costing. 5
- Q.3. (a) What do you understand by marketing information system? Describe the components of MIS and reporting plan. 5  
 (b) What is logistics planning? Describe the importance of logistics in dairying and some decisions that need to be taken for sale efficient logistics. 5
- Q.4. (a) Describe the need and benefits of performance measurement in an organization. What are the tools and techniques of performance controlling? 5  
 (b) Describe the key factors in managing a business. 5
- Q.5. (a) Describe the challenges of operating a small business. 5  
 (b) Enlist must have skills for an entrepreneur. 5