

# **ASSIGNMENT BOOKLET**

## **DIPLOMA PROGRAMME IN VALUE ADDED PRODUCTS FROM FRUITS AND VEGETABLES (DVAPFV)**

**Academic Session: January and July 2022**



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

Dear student,

Welcome you in the Diploma Programme in Value Added Products from Fruits and Vegetables (DVAPFV). 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 No.                           | Last date of submission            |                                    |
|--|------------------------------------|------------------------------------|
|  | (For January, 2022)                | (For July, 2022)                   |
| Assignment 1 (BPVI-001) and 2 (BPVI-002) | 30 <sup>th</sup> August, 2022      | 28 <sup>th</sup> February, 2023    |
| Assignment 3 (BPVI-003) and 4 (BPVI-004) | (Before submission<br>of TEE Form) | (Before submission<br>of TEE Form) |
| Assignment 5 (BPVI-005) and 6 (BPVI-006) |                                    |                                    |
| Assignment 7 (BPVI-007) and 8 (BPVI-008) |                                    |                                    |

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.

**Course Code: BPVI – 001**

**Maximum Marks–50**

**Note: Attempt all questions.**

1. a) Describe different properties of Food. Explain in detail the rheological properties of Food. (5)  
b) Discuss importance of HACCP and TQM in maintaining the quality of Food Products. (5)
2. Describe value added products prepared from fruits and vegetables and food grains based agriculture produce. (10)
3. a) Why fruits and vegetables are known as “Protective Food”? Describe the functions of vitamins and minerals in human body. (5)  
b) Describe contaminants and toxic elements associated with food. (5)
4. a) Define food quality and what are the quality characteristics of food? (5)  
b) Differentiate between food infection and food intoxication. (5)
5. a) Define malnutrition. Discuss different methods which can reduce nutrients losses. (5)  
b) What do you understand by quality and legal standards? Why quality standards are superior than legal standards. (5)

**Course Code: BPVI – 002**

**Maximum Marks–50**

**Note: Attempt all questions.**

1. a) What are the post-harvest losses? How these can be prevented? (5)  
b) What are the main criteria for selection of packaging materials? (5)
2. a) Define food additives and their importance in our day-to-day life. (5)  
b) What are different methods of freezing? Write advantages and disadvantages of any one method. (5)
3. Mention the different methods of removal of ethylene from the storage room. (10)
4. a) What is minimal processing and why there is a demand for minimal processed products? (5)  
b) What is meant by marketing channels? Write various marketing channels of vegetables in nearby market in your area/district. (5)
5. Explain how improper storage results in deterioration of fruits and vegetables. Also explain the role of temperature, oxygen content and humidity in maintaining the quality of fresh fruits and vegetables. (10)

**Course Code: BPVI – 003**

**Maximum Marks–50**

**Note: Attempt all questions.**

1. a) Define food chemistry. Explain its functions. (5)  
b) What are the different phases of growth in the life of a fruit? Explain different changes taking place during ripening of fruits. (5)
2. a) Explain the role of ethylene in post harvest life of horticultural produce. How ethylene effect climacteric and non climacteric fruits? (5)  
b) What is chilling injury? What are the symptoms of chilling injury in lemon and mango? (5)
3. a) Describe major and minor food constituents and their nutritional importance. (5)  
b) What is protein? How the protein of plant and animal origin differ? (5)
4. a) Define wine. Give examples of different varieties of wine used all over the world. (5)  
b) What is vinegar? Explain its importance along with steps involved in vinegar generation. (5)
5. a) What are nutritional advantages of fermented foods? (5)  
b) Define sauerkraut. Describe its preparation. (5)

**Course Code: BPVI – 004**

**Maximum Marks–50**

**Note: Attempt all questions.**

1. a) What is milling? Describe different methods of milling used in food industry with suitable examples. (5)  
b) Explain the importance of material handling devices in food industry. (5)
2. a) Enlist the factors that influence drying. (5)  
b) Enlist the various drying methods. (5)
3. a) Define water activity (Aw). (5)  
b) Enlist the properties of food that control water activity. Explain any one. (5)
4. Explain the role of sugar in food systems. Describe the method of preparation of Jam. What are the problems faced during preparation of Jam? (10)
5. a) Enumerate the advantages of a good plant layout. (5)  
b) Explain the principle and process of pickling. (5)

**Course Code: BPVI-005**

**Maximum Marks – 50**

**Note: Attempt all questions.**

1. a) Define thermal death point and thermal death time. Which method is most common to determine thermal process? (5)
- b) Define pasteurization which time-temperature combination is better to pasteurize the milk and why? (5)
2. a) Define Spoilage. Describe different types of spoilage and preventive measures to be taken to avoid spoilage. (5)
- b) What are different means of controlling the microorganisms? (5)
3. a) Describe different mycotoxins associate with food. What is botulism? (5)
- b) Describe the important diseases caused in human beings through bacterial infection from food. (5)
4. a) What are chemical preservatives and how these are classified? (5)
- b) What is canning? Explain its principle. Describe different types of spoilage observed in canned products. (5)
5. a) Differentiate between sterilization and pasteurization. Why HTST pasteurization is a better treatment than LTLT? (5)
- b) Define the terms associated with thermal processing: D value, Z value, F Value and 12 D concept. (5)

**Course Code: BPVI-006**

**Maximum Marks – 50**

**Note: Attempt all questions.**

1. a) How fermentative utilization of fruits and vegetables waste is carried out? Explain with the help of examples. (5)
- b) Define food fortification. Described different fortified fruit and vegetable products. (5)
2. a) How are acid and low-acid foods distinguished? (5)
- b) How is thermal process for an acid food different than that for a low-acid food? (5)
3. a) Define the terms evaporation and dehydration. Describe the factors affecting dehydration. (5)
- b) Describe the principle of different type of driers. (5)
4. a) Enlist and explain factors which influence the rate of heat penetration into food. (5)
- b) Explain the devices used for determination of heat penetration and methods (5)

used for calculation of process time.

5. a) What are the common symptoms of chilling injury? (5)
- b) List some measures to control chilling injury. (5)

**Course Code: BPVI – 007**

**Maximum Marks – 50**

**Note: Attempt all questions.**

1. a) Define Newton's law in flow behaviour of fluids. What is flow behaviour index? (5)
- b) Describe the use of Tintometer in colour measurement. Describe the Hunter system of colour measurement. (5)
2. a) What do you understand by food texture? Name the instrument used to determine the rheological properties of a food product. (5)
- b) Describe the microkjeldahal method for determination of nitrogen. How the nitrogen value is converted into protein. (5)
3. a) Explain the objectives and functioning of BIS and Agmark. (5) (5)
- b) Explain importance of safe food and different type of food hazards. (5)
4. a) Which are the major parameters included in the microbiological examination of water? (5)
- b) What do you understand by chromatography? Explain different types of detectors used in GLC. (5)
5. a) What is spectroscopy? Explain the terms wave length and frequency of electromagnetic radiation. (5)
- b) Describe different food orders giving date of their issue and ministry which is responsible for the issue. (5)

**Course Code: BPVI – 008**

**Maximum Marks – 50**

**Note: Attempt all questions.**

1. How do we assess the market for any business? Explain the market mix with examples. (10)
2. What is a 'project report'? What aspects are covered under the project report? (10)
3. Enumerate various sources for a business idea. (10)
4. What are the advantages of branding and packaging of a product? (10)
5. What is controlling? Enumerate the tools and techniques of controlling. (10)