

# **ASSIGNMENT BOOKLET**

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

**Academic Session : 2020**



**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 No.	Date of Submission
Assignment 1 (BPVI-001) and 2 (BPVI-002)	Before 31 <sup>st</sup> March
Assignment 3 (BPVI-003) and 4 (BPVI-004)	Before 31 <sup>st</sup> March
Assignment 5 (BPVI-005) and 6 (BPVI-006)	Before 31 <sup>st</sup> March
Assignment 7 (BPVI-007) and 8 (BPVI-008)	Before 31 <sup>st</sup> March

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 – 001**

**Maximum Marks – 50**

**Note: Attempt all questions.**

- Q.1. Define food and explain the major properties of food. (10)
- Q.2. Describe the important processing techniques and value added products prepared from fruits and vegetables, dairy, meat and food grains based agriculture produce. (10)
- Q.3. Explain the scenario of food processing in India and World. (10)
- Q.4. a) Why fruits and vegetables are known as “Protective Food”? Describe the functions of vitamins and minerals in human body. (5)
- b) Give the nutritional importance of milk and explain the important steps involved in clean milk production. (5)
- Q.5. a) What do you understand by HACCP? Explain it. (5)
- b) Describe contaminants and toxic elements associated with food. (5)

**Assignment – 2**  
**Course Code: BPVI – 002**

**Maximum Marks – 50**

**Note: Attempt all questions.**

- Q.1. Explain the importance of post-harvest management. Describe the role of cultural practices in post-harvest losses of fruit and vegetable with suitable examples. (10)
- Q.2. Describe the role of temperature, oxygen content and humidity in maintaining the quality of fresh fruits and vegetables? (10)
- Q.3. a) What are the factors affecting transportation of fresh produce? (5)
- b) What are the main causes of spoilage of root, bulb and tuber crops? (5)
- Q.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)
- Q.5. Define food additives and their importance in our day-to-day life? What are different methods of freezing? Write advantages and disadvantages of the each. (10)

**Assignment – 3**  
**Course Code: BPVI – 003**

**Maximum Marks – 50**

**Note: Attempt all questions.**

- Q.1. a) How chemical changes during ripening affect the rate of respiration. (5)  
b) What is chilling injury and what are the symptoms of chilling injuries in lemon and mango? (5)
- Q.2. 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)
- Q.3. a) How water activity is related to food spoilage? What are the microorganisms of concern in potable water? (5)  
b) What are climacteric and non-climacteric fruits? How ethylene effects these two types of fruits? (5)
- Q.4. a) Describe the technology of vinegar production by fermentation. (5)  
b) Define wine and outline various microorganisms involved during fermentation step in wine making. (5)
- Q.5. a) What are nutritional advantages of fermented foods? Give important pre-requisites for application of industrial scale fermentation. (5)  
b) Define sauerkraut. Describe its preparation and cause of its spoilage. (5)

**Assignment – 4**  
**Course Code: BPVI – 004**

**Maximum Marks – 50**

**Note: Attempt all questions.**

- Q.1. a) Describe the important functions of major components of the refrigeration system with the help of a diagram. (5)  
b) What is drying? Enumerate different drying methods and explain factors influencing drying process. (5)
- Q.2. a) What are advantages of a good plant layout? Give guidelines for a good plant layout suitable for pickling industry taking into account its future expansion. (5)  
b) Explain the principle and process of pickling. (5)
- Q.3. a) Describe different transportation containers used for food products. (5)  
b) What do you understand by Modified Atmosphere Packaging and Active Packaging Technologies? (5)

- Q.4. Describe the method for preparation of Jam and what are the problems encountered in Jam preparation? (10)
- Q.5. Describe general guidelines for layout of a fruit and vegetable processing plant. (10)

**Assignment – 5**  
**Course Code: BPVI – 005**

**Maximum Marks – 50**

**Note: Attempt all questions.**

- Q.1. a) Classify micro-organisms on basis of the various requirements. (5)
- b) Enumerate the factors which influence the growth and inhibition of microorganisms in food. (5)
- Q.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)
- Q.3. a) Define the terms associated with thermal processing: D value, Z value, F Value and 12 D concept. (5)
- b) What is canning? Explain its principles. Write about spoilage of canned products? (5)
- Q.4. a) Differentiate between exotoxins and endotoxins? What are the causative organisms and the foods associated with botulinal food intoxication? (5)
- b) What are mycotoxins? List the various natural toxins present in food and explain the biological effects of aflatoxins. (5)
- Q.5. Describe different steps in the preparation of beer and vinegar. (10)

**Assignment – 6**  
**Course Code: BPVI – 006**

**Maximum Marks – 50**

**Note: Attempt all questions.**

- Q.1. a) Enumerate 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 used for calculation of process time. (5)
- Q.2. a) What is heat exchanger? List the factors affecting heat transfer and enumerate different type of heat exchangers (5)
- b) Describe the principle and process for canning of fruits and vegetables. (5)

- Q.3. Describe three types of irradiation approved for food irradiation and discussed primary and secondary effects of irradiation. (10)
- Q.4. What are the wastes and byproducts of fruit processing industries? List the byproducts of coconut processing. (10)
- Q.5. a) How fermentative utilization of fruits and vegetables waste is carried out? Explain with the help of examples. (5)
- b) Define food fortification and described different fortified fruit and vegetable products. (5)

**Assignment – 7**  
**Course Code: BPVI – 007**

**Maximum Marks – 50**

**Note: Attempt all questions.**

- Q.1. a) Describe GMP and HACCP and write the requirements of GMP and principles of HACCP? (5)
- b) What is sensory evaluation of food? Explain the merits and demerits of sensory evaluation. (5)
- Q.2. a) Explain the objectives and functioning of BIS and Agmark. (5)
- b) Explain importance of safe food and different type of food hazards. (5)
- Q.3. 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)
- Q.4. a) Differentiate between atomic and molecular absorption spectroscopy. Explain Beer's law. What is molecular absorptivity? (5)
- b) Define the functions of Ultraviolet-visible spectroscopy (UV-Vis) spectrophotometer. Differentiate between atomic absorption and atomic emission spectroscopy? (5)
- Q.5. Define chromatography and give its classification and principles of different methods of chromatography. (10)

**Assignment – 8**  
**Course Code: BPVI – 008**

**Maximum Marks – 50**

**Note: Attempt all questions.**

- Q.1. What are the functions of branding and packaging of a product? (10)
- Q.2. Explain various concepts of marketing and how the market is assessed for the start of a business? (10)
- Q.3. Explain four areas of marketing mix with help of examples. (10)
- Q.4. What is project report? Enumerate important aspects covered in the project report Enumerate sources of finance for an entrepreneur. Name important financial institutions which are assisting entrepreneurs. (10)
- Q.5. What is controlling? Enumerate the tools and techniques of controlling. (10)