



FIJI NATIONAL UNIVERSITY

College of Agriculture, Fisheries & Forestry

School of Agricultural Sciences and Forestry

Department of Crop Production

Bachelor of Education (Secondary) (Agricultural Science)

Final Examination

Trimester I – 2018

HOR 701 – Post harvest Management and Value Addition of Fruit and Vegetables

Total Marks: 100

Time Allowed: Three Hours

[An extra ten minutes is allowed for reading this paper]

INSTRUCTIONS

1. This paper consists of 06 pages. Please check your paper is complete.
2. Write your student number on the front page of your **Answer Book**.
3. Write **all** your answers in the **Answer Booklet** provided.
4. If you use extra sheets of paper be sure to show clearly the number of question being answered and to tie each sheet securely in your **Answer Book** at the appropriate place.
5. There are **three** sections in this paper. Sections A and B are compulsory. Note the choices in **Section C**.

SUMMARY OF QUESTIONS

Section	Guidelines	Total Marks	Suggested Time
A	Part 1: Multiple Choice Questions	10	40 minutes
	Part 2: Fill in the Blanks	10	
	Part 3: True and False	10	
	Part 4: Matching	10	
		40 Marks	
B	Short answers Answer all the questions. Each question is worth 5 marks.	30 Marks	50 minutes
C	Long answers Answer only three (3) questions from the following. Answer each question in 300 words. Each question carries 10 marks.	30 Marks	90 minutes

SECTION A

[Compulsory]

[40 marks]

- Answer all four parts in this section.
- Each part is worth 10 marks.

PART .1

MULTIPLE CHOICE

[10 marks]

- A. There are ten multiple-choice questions in this part.
B. All are compulsory.
C. Each question is worth 1 mark.
D. For each question, circle the letter of the best answer on the grid provided in the Answer Booklet.

1. Which of the following acts as a thickening agent in preparation of jelly _____.
 - a. Calcium pectate
 - b. Pectin
 - c. Fatty acid
 - d. Carbohydrate
2. Maturity indices of fruits and vegetables are important because they ensure _____.
 - a. Sensory quality
 - b. Nutritional quality
 - c. Post-harvest life
 - d. All of the above
3. Anthocyanin is main colouring compound in _____.
 - a. Tomato
 - b. Cucumber
 - c. Brinjal
 - d. Watermelon
4. Which of the following is not an advantage of hand harvesting _____.
 - a. Inaccurate selection of maturity
 - b. Accurate grading
 - c. Less expensive
 - d. Minimum capital investment
5. Fruits become soft after ripening mainly due to dissolution of _____ substance in the cell wall.
 - a. Fat
 - b. Carbohydrate
 - c. Protein
 - d. Pectin

6. Pectin is activated in presence of _____ .
 - a. High sugar
 - b. Acid
 - c. Both A and B
 - d. None of the above

7. Packaging play a vital role in _____ .
 - a. Conservation
 - b. Preservation
 - c. Transportation
 - d. All of the above

8. Precooling is done to remove the _____ of the harvested produce.
 - a. Coldness
 - b. Field heat
 - c. Bruises
 - d. None of the above

9. Vacuum cooling is most efficient method of cooling for _____ .
 - a. Apple
 - b. Banana
 - c. Tomato
 - d. Leafy vegetables

10. Asepsis means _____ .
 - a. Hindering the growth and activity of micro organisms
 - b. Removal of micro organisms
 - c. Keeping out the micro organisms
 - d. Killing the micro organisms

PART 2

Matching

[10 marks]

- Match the descriptions in List B with the words in List A.
- Write the letter of the description from List B in the space beside the matching word.

<u>List A</u>	<u>List B</u>
_____ 1. Marmalade	a. Removal of micro organisms
_____ 2. Harvesting	b. Causes de-greening in orange and banana
_____ 3. Candy	c. Keeping out the micro organisms
_____ 4. Anaerobic condition	d. <i>Cymbopogon Winterianus</i>
_____ 5. Ethylene	e. Packaging offers an extensive barrier against corrosion, oxidation and moisture

- | | |
|--|---|
| _____ 6. Vacuum | f. A product made by boiling fruit pulp with sufficient sugar to a reasonably thick consistency, firm enough to hold fruit tissues in position. |
| _____ 7. Filtration | g. Hindering the growth and activity of micro organism |
| _____ 8. Jam | h. Killing the micro organism |
| _____ 9. Asepsis | i. The fruit jelly in which the slices of the fruit or its peel is suspended |
| _____ 10. Exposure to high temperature | j. It is detaching a commodity from the point of origin
k. a fruit or vegetable impregnated with cane sugar or glucose syrup and subsequently drained free of syrup and dried
l. turmeric |

Part.3

True and False

[10 marks]

- Write 'T' if you think that the statement is correct and 'F' if you think it is incorrect.
- Write your answers in the Answer Booklet provided on the right hand side beside each question number.

- _____ 1. Forced air cooling – Cold air is forced to flow, inside of the container
- _____ 2. Curing is done immediately after harvesting to weaken the skin.
- _____ 3. Sprouting is a major problem during storage in onion.
- _____ 4. The above ground or partly above ground rooms used for storage or often called as cellars.
- _____ 5. By pasteurization, milk is pasteurized by HTHT at 72°C for 15 second.
- _____ 6. Acid fruit juices require lower temperature and less time for pasteurization than the less acid ones.
- _____ 7. Maturity indices facilitates marketing over the phone or through internet.
- _____ 8. Refractometer is a device used to test the solidity of the fruit.
- _____ 9. Breaking is detaching a commodity from the point of origin.
- _____ 10. Ripening refers to the changes that occurs in a mature fruit either before harvest or after harvest

Part.4

Fill in the blanks

[10 marks]

- Write your answers in the space provided in the Answer Booklet.

1. The last stage in the ontogeny of plant organ _____.
2. Ripening is a complex physiological process resulting in softening, _____, sweetening and increase in aroma compounds.
3. Estimated level of post-harvest losses in Philippines is _____ percent.
4. _____ is naturally occurring thickening agent.
5. Post-harvest management is very important to horticultural crops because of their _____ nature.
6. In situ storage is normally practiced in _____.
7. The _____ percentage and _____ content was higher in precooled fruits than without precooled fruits.
8. Packaging can be defined as _____ function arrived at minimizing cost of delivery while maximizing sales.
9. In ZECC when outside temperature is 44°C the maximum temperature inside the chamber never goes beyond more than _____.
10. Usually, the juices are pasteurized at about _____ for 25-30 minutes, according to nature of juice and the size of container.

SECTION. B

[Compulsory]

(30 Marks)

SHORT ANSWERS

- Answer the following questions.
 - Each question is worth 5 marks.
 - There are 6 questions only.
1. Analyse the importance and scope of fruit and vegetable in Fiji.
 2. Write short notes on:
 - a. Jam
 - b. Jelly
 3. Utilize your knowledge to differentiate preserved and candy.
 4. Analyse physiological maturity and horticultural maturity with examples.
 5. Utilize your knowledge to discuss advantages of fruit and vegetable preservation.
 6. Analyse the function, purpose and characters of cushioning materials.

Section C

Long Answers

[30 marks]

- There are 4 questions in this section.
 - Answer only three (3) questions.
 - Each question is worth 10 marks.
 - Answer each question in approximately 300 words in the Answer Booklet provided.
1. Apply your knowledge to list unfermented beverages and discuss them in detail.
 2. Apply your knowledge on preparation of pickles and different method of preservations.
 3. Define harvesting? Provide the important considerations, while preparing for harvesting.
 4. Provide benefits of storage and application of controlled/ modified atmosphere storage.

THE END