NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY

FACULTY OF HEALTH, NATURAL RESOURCES AND APPLIED SCIENCES

DEPARTMENT OF AGRICULTURE AND NATURAL RESOURCES SCIENCES

QUALIFICATION : BACHELOR OF HORTICULTURE	
QUALIFICATION CODE: 07BHOR	**LEVEL:** 7
COURSE CODE: PPT720S	**COURSE NAME:** POSTHARVEST PHYSIOLOGY AND TECHNOLOGY
DATE: JANUARY 2023	
DURATION: 3 HOURS	**MARKS: 100**

SECOND OPPORTUNITY EXAMINATION QUESTION PAPER	
EXAMINER(S)	Dr Norman Muzhinji
MODERATOR:	Dr Brian Makeredza

INSTRUCTIONS
1. Answer ALL the questions. 2. Write clearly and neatly. 3. Number the answers clearly.

PERMISSIBLE MATERIALS

1. Examination question paper
2. Answering book

THIS QUESTION PAPER CONSISTS OF 3 PAGES (Excluding this front page)

Section A: Multiple choice questions (15 marks)

1. . Which is the precursor of Ethylene
   A. Tryptophane
   B. Methionine
   C. ABA
   D. IAA
2. Storage of fruits and vegetables, where the gas composition is changed from that of normal atmosphere and a precise control is maintained over the atmospheric composition during storage period is known as;
   A. Cold storage
   B. Hypobaric storage
   C. Modified Atmospheric storage
   D. Controlled atmospheric storage
3. Individual shrink wrapping for packaging is generally most suitable for
   A. Climacteric commodities
   B. Semi-climacteric commodities
   C. Non-climacteric commodities
   D. Both a) and b)
4. The most reliable maturity index for several fruit is
   A. Dry matter
   B. Soluble solid concentration
   C. Skin color
   D. Specific gravity
5. For better post-harvest quality, the cut flowers should be harvested during
   A. Evening hours
   B. Early morning hours
   C. Noon time
   D. Mid-day
6. Waxing of fruits is done mainly to reduce
   A. Transpiration
   B. Respiration
   C. Ripening
   D. Transpiration and respiration
7. The browning of fresh potato cut surface is due to
   A. Non-enzymatic browning
   B. Mallard reaction
   C. Fermentation

D. Enzymatic browning

8. Symptoms associated with chilling injury are
   A. Surface pitting
   B. Internal discoloration
   C. Water-soaked tissues
   D. Failure to ripen
   E. All of the above
9. The major indicator and a useful guide to predict the potential storage life of the fruits and vegetables is
   A. Water uptake rate
   B. Rate of ascorbic acid loss
   C. Rate of mineral uptake
   D. Respiration rate
10. Crops which have higher moisture content generally have
   A. Poorer storage characteristics.
   B. Taste nice
   C. Low rates of respiration
   D. Are good for the market
11. In most fruits and vegetables, changes in colour is due to degradation of chlorophyl. Which of the following factors is not responsible for degradation of chlorophyll?
   A. pH
   B. Oxidation
   C. Enzymes
   D. Malic acid

12. Which pigments are responsible for the red colour in tomatoes?

   A. Chlorophyl
   B. Lycopene
   C. Carotenoids
   D. Tannins
13. When can a fruit or vegetables be harvested
   A. At physiological maturity
   B. Ripening
   C. Senescence
   D. After 3 months

14. Fruit stem end rot is one of the most devastating diseases affecting fruits post-harvest. What is the causative agent of fruit stem end rot?
   A. Too much auxins in the plant
   B. Fungal infection

C. Harvesting too early
D. Enzymatic browning

15. Example of Climacteric fruit
    A. Banana
    B. Citrus
    C. Litchi
    D. Grape

Section B: Answer all questions (85 MARKS)

1. Write short notes on the following terms, giving examples
    a. Climacteric and non-climacteric fruits (4)
    b. Qualitative post-harvest losses and quantitative post-harvest losses (4)
2. Describe the postharvest factors affecting the quality of post-harvest life of fruits and vegetables (16)
3. Most fruits and vegetables at harvest are made up of water.
    a. Why do fruits and vegetables lose water and what effects does this have on the quality of the produce? (6)
    b. Identify the factors responsible for water loss in fruit and vegetables and outline strategies that you would implement to mitigate the water loss problem. (10)
4. a. Define the term pre-cooling of vegetables? (2)
    b. Describe the various methods of pre-cooling of fruits and vegetables. (8)

5. Mention two main physiological activities that take place in growing plants and harvested produce which have implication on how long they can be kept? (2)

6.Explain briefly six (6) strategies that you can use to reduce post-harvest losses in fruits and vegetables produce (12)

7. A Food Safety Manager at Namibia Fresh Produce Market is reviewing the shipment that came in late yesterday. She noticed that the strawberries have decayed. What should she do? (1)
8. Assume you have been appointed as a manager to oversee the operations of Mashare Irrigation Scheme responsible for production of spinach. Make your best recommendation for harvesting and handling harvested spinach assuming the irrigation scheme lack refrigerated storage facilities? (4)
9. a. List four (4) parameters that are used to determine the quality of fruits and vegetables. (4)
    b. Describe the factors that determine the quality fruits, vegetables, and flowers? (6)

10. a. Describe at least four (4) sources of microorganisms responsible for fruits and vegetables spoilage. (4)
    b.List at least two (2) the methods that can be used to reduce microbial spoilage in fruit and