

**MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY**

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**University Examinations 2014/2015**

THIRD YEAR, SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF FOOD SCIENCE AND TECHNOLOGY

**AFP 2301: POSTHARVEST PHYSIOLOGY**

**DATE: APRIL 2015 TIME: HOURS**

**INSTRUCTIONS:** *Answer question* ***one*** *and any other* ***two*** *questions*

**QUESTION ONE – (30 MARKS)**

1. Define the term fruit ripening. (2 Marks)
2. Distinguish between ripening and senescence. 4 Marks)
3. State five (5) indices used to determine fresh fruits and vegetable maturity status.(5 Marks)
4. Distinguish between destructive and non-destructive methods of assessing fruit maturity. (2 Marks)
5. State five(5) plant physiological processes and corroborate their relationship with postharvest management. (5 Marks)
6. State key composition changes that take place during fruit ripening. (5 Marks)
7. Distinguish between shelf-life and storage life. (2 Marks)
8. State five (5) postharvest management practices critical in prolonging fresh commodity postharvest storage life. (5 Marks)

**QUESTION TWO (20 MARKS)**

Both photosynthesis and respiration are crucial during plant growth and after harvest.

1. Describe how light energy is trapped by plants , converted into chemical energy and used to make carbohydrates. (6 Marks)
2. Describe the three (3) stages of respiratory processes. (6 Marks)
3. How do these two plant physiology processes contribute to commodity growth and development, maturity and quality. (8 Marks)

**QUESTION THREE (20 MARKS)**

A group of 3rd year students from the department of Food science in Meru University of Science and Technology were conducting an experiment on postharvest physiology using oranges and bananas. Both oranges and bananas were obtained from a farm while green but physiologically mature. During this experiment, students stored both commodities in a cold room with ripening avocados. Three days of the experiment, they realized that bananas had turned yellow and oranges were turning orange in colour.

1. Distinguish between oranges and bananas ripening behaviour. (6 Marks)
2. What may have triggered the dramatic turning in oranges and bananas yet both were stored at low temperatures ? (4 Marks)
3. Discuss a post harvest management plan that could have been used to avert these dramatic changes and subsequent short storage life. (10 Marks)

**QUESTION FOUR (20 MARKS)**

1. Elucidate on ethylene biosynthesis and signaling pathway. (12 Marks)
2. Discuss factors that regulate ethylene biosynthesis pathway. (8 Marks)