



MACHAKOS UNIVERSITY

University Examinations for 2018/2019 Academic Year

SCHOOL OF AGRICULTURAL SCIENCES

DEPARTMENT OF AGRICULTURAL EDUCATION AND EXTENSION

FOURTH YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF SCIENCE IN AGRICULTURAL EDUCATION AND EXTENSION

BACHELOR OF SCIENCE IN AGRIBUSINESS MANAGEMENT AND TRADE

BACHELOR OF EDUCATION (SPECIAL NEEDS EDUCATION

BACHELOR OF EDUCATION (SCIENCE)

AGR 412/KST 401: POSTHARVEST TECHNOLOGY

DATE:

TIME:

INSTRUCTIONS:

Answer question one and two other questions

QUESTION ONE

- a) Differentiate between climacteric and non-climacteric fruits and give **TWO** examples in each category (4 marks)
- b) With the aid of a well-labelled diagrams name and show the various phases of climacteric development in both climacteric and non-climacteric fruits (5 marks)
- c) Outline the requirements for the plastic films used for MAP of fresh produce (5 marks)
- d) Postharvest handling of perishable agricultural commodities poses a big challenge to agribusiness management:
 - (i) Explain the interrelationship between postharvest physiology and postharvest technology of perishable agricultural commodities from an agribusiness view point (4 marks)
 - (ii) Explain the importance of postharvest technology of perishable agricultural commodities in agribusiness management and trade (4 marks)
- (e) Discuss the need for proper temperature management in postharvest handling of agricultural commodities (8 marks)

QUESTION TWO (20 MARKS)

- a) Quality of harvested agricultural commodities has an important bearing to agribusiness management and trade:
- (i) Explain the term quality with respect to harvested agricultural commodities (2 marks)
 - (ii) Name the **TWO** classifications of quality components in harvested agricultural food crops (1 mark)
 - (iii) Discuss the various components of quality with respect to agricultural food crops (12 marks)
- b) Discuss the expected package requirements for packaging of fresh produce (5 marks)

QUESTION THREE (20 MARKS)

- (a) Name and define the **TWO** measurements that may be used to assess the quality of harvested agricultural commodities (2 marks)
- (b) Describe the various methods used to assess the quality of harvested agricultural commodities (9 marks)
- (c) Discuss the factors that affect the quality of harvested agricultural commodities (9 marks)

QUESTION FOUR (20 MARKS)

- a) The maturity of harvested perishable agricultural commodities has a good correlation to product quality:
- (i) Explain the need to measure the maturity of agricultural commodities (4 marks)
 - (ii) Explain the requirements for a maturity index (2 marks)
- b) Explain the predisposing factors that may lead to development of aflatoxin in non-perishable commodities (4 marks)
- c) Discuss the need for rapid cooling of harvested perishable agricultural commodities (10 marks)

QUESTION FIVE (20 MARKS)

- a) Explain the difference between controlled atmosphere and modified atmosphere storage systems (2 marks)
- b) Modified atmosphere packaging (MAP) is increasingly being used for the storage of fresh horticultural commodities.
- (i) With the aid of relevant graphical illustrations explain the **TWO** methods used to create modified atmosphere conditions (4 marks)
 - (ii) Explain **FOUR** positive effects of film packaging other than creation of MA conditions (4 marks)
- c) Discuss the physiological and biochemical basis for the use of controlled /modified atmosphere storage systems for extending postharvest storage life of perishable commodities (10 marks)