



MACHAKOS UNIVERSITY

University Examinations 2018/2019

SCHOOL OF AGRICULTURE AND NATURAL RESOURCES

DEPARTMENT OF AGRICULTURAL EDUCATION AND EXTENSION

THIRD YEAR SECOND SEMESTER EXAMINATION FOR

BACHELOR OF SCIENCE IN AGRIBUSINESS MANAGEMENT AND TRADE

AGR 412: POSTHARVEST TECHNOLOGY

DATE: 23/4/2019

TIME: 11:00 – 1:00 PM

INSTRUCTIONS: Answer question ONE and any other TWO questions

QUESTION ONE (COMPULSORY) (30 MARKS)

- a) 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)
- b) Explain how postharvest technology stimulates agricultural production. (5 marks)
- c) Explain the principle behind tissue browning that is manifested in perishable commodities of tropical/sub-tropical origin when subjected to chilling temperatures. (5 marks)
- d) Outline the elements of harvest operation. (4 marks)
- e) Explain the factors that influence the adoption of controlled atmosphere and/or modified atmosphere storage in agribusiness management. (4 marks)
- f) Describe the factors that influence the rate of cooling of harvested agricultural produce. (4 marks)

QUESTION TWO (20 MARKS)

- a) Discuss the **TWO** categories of fleshy fruits and the principles behind their respective behaviour. (8 marks)
- b) Explain the hypotheses that have been put forward to explain the colour changes that occur during fleshy fruit ripening. (4 marks)
- c) Describe the chemical measurements of maturity in agricultural commodities (8 marks)

QUESTION THREE (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 FOUR (20 MARKS)

- a) Explain the functions of water in harvested agricultural commodities (6 marks)
- b) During postharvest handling of perishable commodities, control of water loss is an important operational activity:
 - i) Explain the importance of controlling water loss from harvested perishable commodities. (4 marks)
 - ii) Describe the methods used to control water loss from harvested perishable commodities. (10 marks)

QUESTION FIVE (20 MARKS)

- a) Explain the need for cooling harvested perishable commodities. (4 marks)
- b) Explain the **TWO** critical processes involved in cooling of harvested perishable commodities. (4 marks)
- c) Describe the various methods that may be applied in the cooling of harvested perishable produce. (12 marks)