



MACHAKOS UNIVERSITY

University Examinations for 2024/2025 Academic Year

SCHOOL OF AGRICULTURE, ENVIRONMENT AND HEALTH SCIENCES

DEPARTMENT OF AGRICULTURAL SCIENCES

THIRD YEAR FIRST SEMESTER EXAMINATION

BACHELOR OF SCIENCE IN AGRICULTURAL EDUCATION AND EXTENSION

BACHELOR OF EDUCATION (SCIENCE)

BACHELOR OF EDUCATION (SPECIAL NEEDS)

AGR309: PERENNIAL CROPS

DATE:

TIME:

INSTRUCTION: Answer Question **One** And any Other **Two** Questions.

QUESTION ONE (30 MARKS)

- a) Describe three morphological differences between *Coffea arabica* and *Coffea canephora* types of coffee (3 marks)
- b) With a crop example, distinguish the damage caused by the following pests and diseases in perennial crops
 - i. Early shoot borer and top borer (2 marks)
 - ii. Bud disease and false bud disease (2 marks)
- c) Using a crop example in each case, explain two roles of the following ecological conditions in perennial crops production
 - i. Elevation (3 marks)
 - ii. Sunlight (3 marks)
- d) Explain four management practices for increasing pyrethrum yield (4 marks)
- e) Explain four roles of perennial crops in soil nutrient management (4 marks)

- f) With the aid of a diagram, describe canopy management in macadamia production (3 marks)
- g) Explain three uses in each of the following crops
- i. Coconut (3 marks)
 - ii. sugarcane (3 marks)

QUESTION TWO (20 MARKS)

- a) Describe the production of coffee under the following headings
- i) Climatic requirements (4 marks)
 - ii) Pruning (4 marks)
 - iii) Coffee berry disease symptoms (3 marks)
 - iv) Fertilization (4 marks)
- b) Describe the following in macadamia production
- i. Post-harvest practices (4 marks)
 - ii. Macadamia canker (2 marks)

QUESTION THREE (20 MARKS)

- a) Discuss cashew nut production under the following headings
- i) Ecological requirements (6 marks)
 - ii) Spacing (4 marks)
 - iii) Rehabilitation (2 marks)
- b) Discuss four roles of perennial crops in the development of the country's economy (8 marks)

QUESTION FOUR (20 MARKS)

- a) Explain the production of tea under the headings
- i) Fertilization (4 marks)
 - ii) Shade (3 marks)
 - iii) Pruning (4 marks)
 - iv) Harvesting (4 marks)
- b) Explain five challenges facing coconut farmers which have contributed to low production in Kenya (5 marks)

QUESTION FIVE (20 MARKS)

- a) Explain sisal production under the following headings
 - i) Ecological conditions (3 marks)
 - ii) Uses (3 marks)
 - iii) Environmental benefits (3 marks)
 - iv) Dieback (2 marks)
 - v) Post harvest processing (5 marks)
- b) Explain four environmentally friendly strategies for managing pests and diseases in perennial crops (4 marks)