



# MACHAKOS UNIVERSITY

University Examinations for 2021/2022 Academic Year

SCHOOL OF AGRICULTURAL SCIENCES

DEPARTMENT OF AGRICULTURAL EDUCATION AND EXTENSION

THIRD YEAR SECOND SEMESTER EXAMINATION

BACHELOR OF SCIENCE (AGRICULTURAL EDUCATION AND EXTENSION)

BACHELOR OF EDUCATION (SPECIAL NEEDS)

BACHELOR OF EDUCATION (SCIENCE)

AGR309: PERENNIAL CROPS

**DATE: 7/12/2021**

**TIME: 8.30-10.30 AM**

**INSTRUCTION TO CANDIDATES: Answer ALL questions from Section A and any other TWO from Section B:**

**SECTION A: COMPULSORY: (30 MARKS)**

**QUESTION ONE (30 MARKS)**

- a) Explain four uses in each of the following perennial crops
- i. Sisal (2 marks)
  - ii. Sugarcane (2 marks)
  - iii. Macadamia (2 marks)
- b) Explain four roles played by perennial crop in environmental sustainability (2 marks)
- c) i. Describe four methods of maintaining a plucking table in tea production (4 marks)
- ii. Explain four challenges associated with pruning in tea production (2 marks)
- d) Describe how the following crops are propagated
- i. Sisal (2 marks)
  - ii. Cashew nut (2 marks)
- e) Explain two roles of each of the following in perennial crops production
- i. Shade trees (1 mark)
  - ii. Windbreaks (1 mark)
  - iii. Rehabilitation (1 mark)

- f) Describe three distinctions between *Coffea arabica* and *Coffea canephora* (3 marks)
- g) With a specific example of crop, describe the symptoms caused by the following pests and diseases
- i. Bud disease (2 marks)
  - ii. Agave weevil (2 marks)
  - iii. Lethal bole rot (2 marks)

**SECTION B: ANSWER ANY TWO QUESTIONS (40 MARKS)**

**QUESTION TWO (20 MARKS)**

- a) Discuss the production of coconut under the following subheadings
- i. Ecological conditions (5 marks)
  - ii. Seedbed preparation (5 marks)
  - iii. Fertilization (5 marks)
  - iv. Harvesting (5 marks)
- b) Discuss coffee production under the following subheadings
- i. Climatic requirements (5 marks)
  - ii. Pruning (5 marks)
  - iii. Breeding and selection (5 marks)
  - iv. Coffee berry disease (5 marks)

**QUESTION THREE (20 MARKS)**

- a) Discuss six solutions to challenges facing farmers in perennial crop production in Kenya (12 marks)
- b) Discuss macadamia production under the following subheadings: (8 marks)
- i. Planting
  - ii. Weeding
  - iii. Fertilization
  - iv. Harvesting

**QUESTION FOUR (20 MARKS)**

- a) Describe the production of pyrethrum under the following subheadings
- i. Climatic requirements (3 marks)
  - ii. Weeding (3 marks)
  - iii. Cutting back (3 marks)
  - iv. Harvesting (3 marks)

- b) Explain four management practices in sisal farming you would encourage a farmer to apply to enhance production (8 marks)

**QUESTION FIVE (20 MARKS)**

- a) Discuss five emerging issues in perennial crop production in Kenya. (10 marks)
- b) With specific crop examples, describe two symptoms that will help farmers in diagnosis of following pests and diseases
- i. Red ring nematode (2 marks)
  - ii. Pink disease (2 marks)
  - iii. Stem and Root Borer (2 marks)
  - iv. Trunk canker (2 marks)
  - v. Chafer grubs (2 marks)