

2425/201
CROP PRODUCTION II, SOIL FERTILITY
AND PLANT NUTRITION
Oct./Nov. 2009
Time: 3 hours

THE KENYA NATIONAL EXAMINATIONS COUNCIL

**DIPLOMA IN AGRICULTURE
MODULE II**

CROP PRODUCTION II, SOIL FERTILITY
AND PLANT NUTRITION

3 hours

INSTRUCTIONS TO CANDIDATES

You should have the following for this examination:

*Answer booklet
Calculator*

*This paper consists of **EIGHT** questions.*

*Answer any **THREE** questions from section **A** and any **TWO** questions from section **B**.*

All questions carry equal marks.

Maximum marks for each part of a question are as shown.

This paper consists of 3 printed pages.

**Candidates should check the question paper to ascertain that
all the pages are printed as indicated and that no questions are missing.**

SECTION A : CROP PRODUCTION*Answer any THREE questions from this section.*

1. (a) Explain the objectives of sugarcane breeding programmes. (12 marks)
- (b) Explain characteristics that determine cotton lint quality. (8 marks)
2. (a) Compare direct sowing and transplanting methods of establishing rice. (12 marks)
- (b) Explain how cassava planting materials are prepared. (8 marks)
3. (a) Explain the management of coffee bushes under shade conditions. (12 marks)
- (b) Explain factors that determine seed rate in wheat production. (8 marks)
4. (a) Explain:
 - (i) the effect of beanflies;
 - (ii) prevention measures of beanflies. (12 marks)
- (b) Explain the insecticidal properties of pyrethrum. (8 marks)
5. (a) Explain the effect of type of soils on tobacco production. (8 marks)
- (b) Explain the factors affecting tea quality. *Low alt* (12 marks)
- Shade
- High altitudes
pests & diseases

SECTION B : SOIL FERTILITY AND SOIL SCIENCE*Answer any TWO questions from this section.*

6. (a) Explain factors affecting nitrification process. (12 marks)
- (b) Explain the importance of soil testing. (8 marks)
7. (a) A field of maize showed stunted plants with reddish purple leaves but tested high in nitrates.
 - (i) Identify the deficient nutrient.
 - (ii) Explain the possible causes of the symptoms of the deficient nutrient. (12 marks)

- (b) Explain the factors that influence availability of micronutrients in the soil. (8 marks)
8. (a) (i) Differentiate between active acidity and potential acidity. (3 marks)
- (ii) Table 1 show the properties of selected liming materials.

Table 1

Liming materials	Molecular weights g/mole	Equivalent weights	Percent calcium carbonate equivalent	Percent calcium content
Calcium Oxide (CaO)	56			
Calcium hydroxide (Ca(OH) ₂)	74			
Calcium carbonate (CaCO ₃)	100			

Relative atomic masses for the element

Ca = 40, O = 16, H = 1, C = 12.

Complete the table by calculating the values for equivalent weights, percent calcium carbonate equivalent and percent calcium content. (9 marks)

- (iii) Using chemical equations show how calcium carbonate neutralises soil acidity. (4 marks)
- (b) Explain the effect of organic manures on soil water retention capacity. (4 marks)