

2425/201
CROP PRODUCTION II
SOIL FERTILITY AND PLANT
NUTRITION
June/July 2011
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.

This paper consists of TWO sections A and B.

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

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

Answer any **THREE** questions from this section.

1. (a) Explain push-pull method for control of striga weed and stem borer in maize production. (10 marks)
- (b) Explain the damage caused by the following in maize production:
- (i) striga;
- (ii) stem borer. (10 marks)
2. (a) Describe cotton production under the following:
- (i) Growth habit;
- (ii) Symptoms of root-knot nematode;
- (iii) Determinants of quality. (15 marks)
- (b) Outline five uses of cassava to the farmers. (5 marks)
3. (a) Describe the harvesting and processing of sugarcane. (10 marks)
- (b) Explain 'tipping-in' procedure of bringing tea into bearing. (10 marks)
4. (a) Describe the characteristics of a groundnut plant and how the pods are formed. (7 marks)
- (b) Outline ecological requirements for optimum production of groundnuts. (5 marks)
- (c) (i) Name **three** Agricultural oil bearing trees. (1½ marks)
- (ii) Explain how copra oil is extracted from coconut. (6½ marks)
5. (a) Describe the causal agent, symptoms and conditions favouring the spread of coffee leaf rust. (10 marks)
- (b) Explain the following in pyrethrum production:
- (i) ridging;
- (ii) cutting back. (10 marks)

SECTION B

Answer any **TWO** questions from this section

6. (a) (i) Complete the following chemical equations and give the name of the fertilizer product formed.
- $$H_3PO_4 + 2NH_3 \longrightarrow ?$$
- $$NH_4NO_3 + CaCO_3 \longrightarrow ?$$
- $$2KCl + H_2SO_4 \longrightarrow ?$$
- (3 marks)
- (ii) State the advantages and disadvantages of Ammonium ion fertilizers. (6 marks)
- (iii) Explain the benefits of slow-release nitrogen fertilizers. (6 marks)
- (b) Outline the functions of micro-nutrients in plants. (5 marks)
7. (a) (i) Explain the impact of Nitrate-Nitrogen ($NO_3 - N$) fertilizer use on the environment. (6 marks)
- (ii) Explain nitrogen fertilizer management options to limit environmental impacts. (9 marks)
- (b) Outline factors affecting potassium nutrient availability to plants. (5 marks)
8. (a) (i) Name **three** types of ammonium phosphate fertilizers. ($1\frac{1}{2}$ marks)
- (ii) State the properties of ammonium phosphate fertilizers. (5 marks)
- (b) (i) Define chelation. ($1\frac{1}{2}$ marks)
- (ii) Explain how chelation affects iron (Fe) uptake in plants. (8 marks)
- (c) Explain phosphate solubilization. (4 marks)