

Candidate's Name _____ Index No. _____

2425/201

Candidate's Signature _____

**CROP PRODUCTION, SOIL FERTILITY
AND PLANT NUTRITION**

Date _____

June/July 2013

Time: 3 hours

**THE KENYA NATIONAL EXAMINATIONS COUNCIL****DIPLOMA IN AGRICULTURE
MODULE II****CROP PRODUCTION, SOIL FERTILITY AND PLANT NUTRITION****3 hours****INSTRUCTIONS TO CANDIDATES***Write your name and index number in the spaces provided above.**Sign and write the date of examination in the spaces provided above.**You should have a calculator for this examination.**This paper consists of **TWO** sections; **A** and **B**.**Answer any **THREE** questions from section **A** and any **TWO** questions from section **B** in the spaces provided.**All questions carry equal marks.**Maximum marks for each part of a question are as shown.**Do **NOT** remove any pages from this booklet.**Candidates should answer the questions in English.***For Examiner's Use Only**

Section	Question	Maximum Score	Candidate's Score
A	1	20	
	2	20	
	3	20	
	4	20	
	5	20	
B	6	20	
	7	20	
	8	20	
TOTAL SCORE			

This paper consists of 20 printed pages.**Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.**

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SECTION A: CROP PRODUCTION

Answer any **THREE** questions from this section in the spaces provided.

1. (a) Outline **eight** uses of sunflower. (8 marks)
- (b) Discuss the factors affecting cotton yields. (12 marks)
2. (a) State **four** advantages of single stem pruning in coffee production. (4 marks)
- (b) Describe the steps involved in seed pre-treatment in producing healthy rice seedlings. (16 marks)
3. (a) Explain how losses due to diseases can be minimized in wheat production. (10 marks)
- (b) Describe the advantages of cover crops in sisal production. (10 marks)
4. (a) Describe the ecological requirements for cocoyam production. (4 marks)
- (b) Describe soya bean mosaic virus under the following headings:
 - (i) symptoms;
 - (ii) control.(6 marks)
- (c) Discuss the different methods used in the management of diseases in coffee production. (10 marks)
5. (a) Explain the economic importance of growing tea. (5 marks)
- (b) Describe the potassium deficiency symptoms in cassava production. (5 marks)
- (c) Describe **five** methods used to control of striga weed in sorghum production. (10 marks)

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SECTION B: SOIL FERTILITY AND PLANT NUTRITION*Answer any TWO questions from this section in the spaces provided.*

6. (a) Describe the factors that determine amount and use of fertilizer applied. (8 marks)
- (b) Describe the following processes:
- (i) root interception;
- (ii) mass flow;
- (iii) diffusion. (12 marks)
7. (a) Describe the characteristics of green manure plants. (8 marks)
- (b) Discuss the factors affecting nutrient absorption. (12 marks)
8. (a) Discuss the factors affecting the nitrification process. (8 marks)
- (b) Table 1 below shows the laboratory soil test results for soil sample A.

Table 1: Soil test results for sample A

Soil Test	Soil Test Results
Soil pH	5.2
Organic carbon (% C)	0.7
Phosphorous	15 ppm
Cation exchange capacity	15 me/100g of soil

Use the table to answer the following questions.

- (i) Identify the problems affecting the soil sample. (4 marks)
- (ii) Explain how the pH of the soil sample can be improved. (4 marks)
- (iii) Explain the factors that contribute to phosphorus condition of the soil. (4 marks)