2425/201
CROP PRODUCTION II, SOIL FERTILITY AND PLANT NUTRITION
June/July 2019
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;
Non-programmable scientific calculator.
*This paper consists of **EIGHT** questions in **TWO** sections; **A** and **B**.*
*Answer any **THREE** questions from section **A** and any **TWO** questions from section **B** in the answer booklet provided.*
All questions carry equal marks.
Maximum marks for each part of a question are indicated.
Candidates should answer the questions in English.

This paper consists of 4 printed pages.

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

Turn over

SECTION A: CROP PRODUCTION II (60 marks)

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

1. Describe tobacco production with respect to:

   (a) preparation of planting materials; (4 marks)

   (b) nursery establishment; (10 marks)

   (c) priming. (6 marks)

2. (a) Describe sweet potato virus disease with respect to:

   (i) cause;

   (ii) symptoms;

   (iii) control. (6 marks)

   (b) Outline the process of bringing tea into production. (14 marks)

3. With reference to nursery establishment in coffee, describe each of the following:

   (a) site selection; (4 marks)

   (b) establishment; (10 marks)

   (c) management. (6 marks)

4. Describe sorghum production with respect to:

   (a) ecological requirements; (4 marks)

   (b) varieties; (2 marks)

   (c) crop establishment; (7 marks)

   (d) ratooning. (7 marks)

5. (a) Highlight the characteristics of HART 89 M variety of cotton. (8 marks)

   (b) Outline the steps involved in sugarcane processing. (12 marks)

SECTION B: SOIL FERTILITY AND PLANT NUTRITION (40 marks)

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

6. (a) Explain the importance of soil micro-organisms in soil fertility. (10 marks)

(b) Outline the steps involved in plant tissue analysis. (10 marks)

7. (a) (i) Define the term 'Carbon:Nitrogen (C:N) ratio'.

(ii) Explain the significance of C:N ratio. (5 marks)

(b) Highlight the characteristics of a fertile soil. (5 marks)

(c) (i) Define the term 'critical nutrient concentration'.

(ii) Figure 1 shows the relationship between plant nutrient concentration and percentage maximum growth rate.

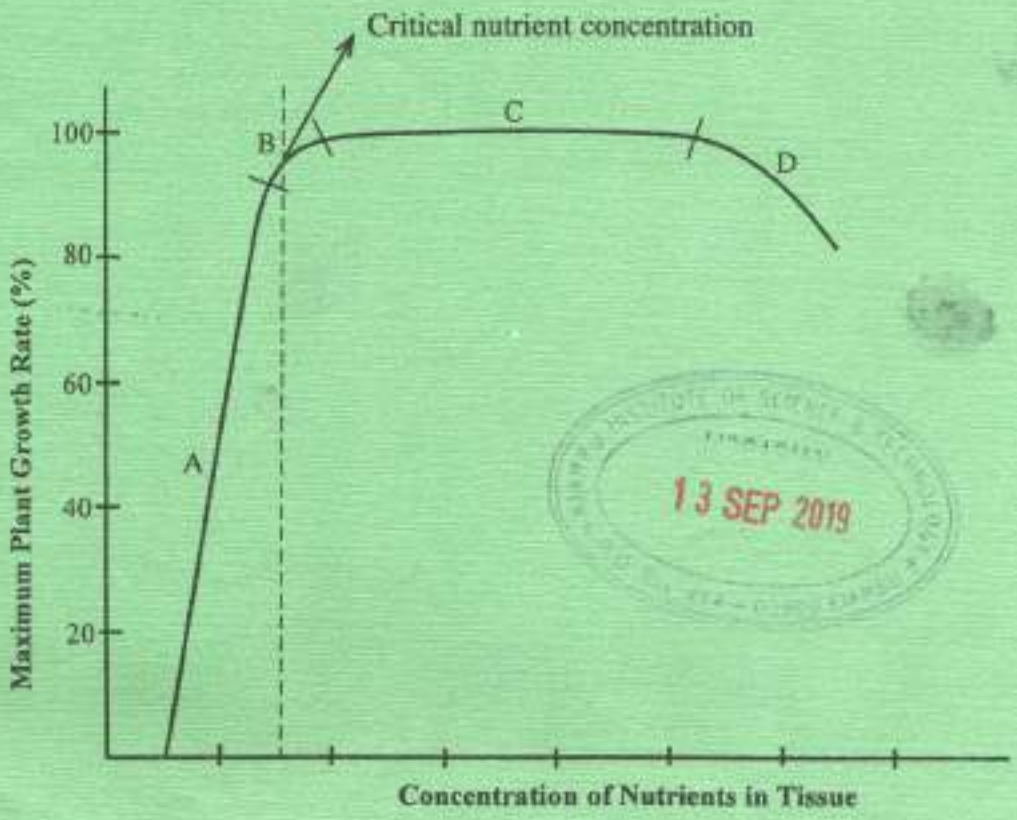

Fig. 1

Describe the phases labelled A, B, C and D. (10 marks)

8. (a) A farmer intends to apply C.A.N fertilizer (26% N) in a plot measuring 40 m by 100 m planted with maize at a spacing of 75 cm x 25 cm. Given that the fertilizer rate is 78 kg N/ha, determine the amount of C.A.N fertilizer applied per plant. (10 marks)

(b) Using balanced chemical equations, explain the reaction of calcium oxide lime applied to a soil. (10 marks)

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