



1ST SEM. 2006/2007

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UNIVERSITY OF SWAZILAND

FINAL EXAMINATION PAPER

PROGRAMME: **BACHELOR OF SCIENCE IN AGRICULTURAL
EDUCATION
BACHELOR OF SCIENCE IN AGRONOMY**

COURSE CODE: **CP 302**

TITLE OF PAPER: **CROP NUTRITION**

TIME ALLOWED: **TWO (2) HOURS**

INSTRUCTION: **ANSWER A TOTAL OF FOUR [4] QUESTIONS. ALL
QUESTIONS CARRY EQUAL MARKS.**

**DO NOT OPEN THIS PAPER UNTIL PERMISSION HAS BEEN GRANTED
BY THE INVIGILATOR.**

INSTRUCTIONS: ANSWER ANY FOUR [4] QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS.

QUESTION 1

Answer the questions sequentially as arranged below. There will be a penalty for non-sequential arrangement of answers.

- a. What is cation exchange capacity? (2 marks)
- b. Of what importance is cation exchange capacity in agriculture? (2 marks)
- c. Name two cations that can form acids in soils. (2 marks)
- d. Name two cations that can form bases in soils. (2 marks)
- e. What is base saturation? (2 marks)
- f. A soil sample was found to have the following concentrations of cations: Na, 10 cmole/kg; K, 6 cmole/kg; Mg, 16 cmole/kg; Ca, 30 cmole/kg; and H, 20 cmole/kg. Calculate the base saturation of this soil. (15 marks)

[Total marks for Question 1 = 25 marks]

QUESTION 2

Answer the questions sequentially as arranged below. There will be a penalty for non-sequential arrangement of answers.

- a. What is organic matter? (5 marks)
- b. Discuss the chemical importance of organic matter in soils. (10 marks)
- c. Explain the biological importance of organic matter in soils. (10 marks)

[Total marks for Question 2 = 25 marks]

INSTRUCTIONS: ANSWER ANY FOUR [4] QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS.

QUESTION 3

Answer the questions sequentially as arranged below. There will be a penalty for non-sequential arrangement of answers.

- a. Using one sentence only, differentiate between soil fertility and soil productivity.
(4 marks)
- b. What is an essential nutrient element? (3 marks)
- c. Name an element that is essential for animals, but is not essential for plants.
(3 marks)
- d. What is a deficiency symptom? (3 marks)
- e. Describe one specific deficiency symptom of a named mobile element in a named plant. (3 marks)
- f. Explain what you understand by “a mobile element”. (3 marks)
- g. Explain what you understand by “an immobile element”. (3 marks)
- h. Describe one specific deficiency symptom of a named immobile element in a named plant. (3 marks)

[Total marks for Question 3 = 25 marks]

INSTRUCTIONS: ANSWER ANY FOUR [4] QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS.

QUESTION 4

Answer the questions sequentially as arranged below. There will be a penalty for non-sequential arrangement of answers.

- a. Other than injection into the soil, discuss FIVE other methods of fertilizer application. (5 x 4 marks = 20 marks)
- b. What is a soil amendment material? (1 mark)
- c. Excluding fertilizers, name four soil amendment materials. (4 x 1 mark = 4 marks)

[Total marks for Question 4 = 25 marks]

QUESTION 5

Answer the questions sequentially as arranged below. There will be a penalty for non-sequential arrangement of answers.

- a. What is a pesticide? (3 marks)
- b. Name one specific example of a pesticide and state what it is used for. (1 x 2 = 2 marks)
- c. Discuss the behaviour of pesticides in the soil. (20 marks)

[Total marks for Question 5 = 25 marks]