

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

**FIRST YEAR EXAMINATION FOR THE AWARD OF DEGREE OF
MASTERS OF SCIENCE IN AGRICULTURAL EXTENSION AND EDUCATION**

SOIL 836: SOIL FERTILITY AND PLANT NUTRITION

STREAMS: MSC (AGED) YISI P/T

TIME: 3 HOURS

DAY/DATE: FRIDAY 09/08/2019

2.30 PM – 5.30 PM

INSTRUCTIONS:

Answer ALL Questions in Section A (30 Marks) and any Two in Section B (30 marks)

SECTION A

QUESTION ONE

- (a) Explain the importance of sampling soils on a cropped farm. [4 marks]
- (b) Explain the various forms of phosphorus available for plant absorption. [6 marks]
- (c) Describe deficiency symptoms of boron in growing plants. [6 marks]

QUESTION TWO

- (a) Discuss the fates of calcium in the soil solution. [6 marks]
- (b) Many plants engage in symbiosis with microorganisms. Explain any two (2) important types of these relationships. [4 marks]
- (c) Explain the form and functions of manganese in plants. [4 marks]

SECTION B

QUESTION THREEE

- (a) Calculate the amounts of N, P and K contained in 17:17:17 fertilizer. [6 marks]

- (b) Discuss the factors that influence the amount of nitrogen that manure provides and its subsequent availability to plants. [6 marks]
- (c) Explain the basic needs that make plants to grow. [3 marks]

QUESTION FOUR

- (a) Explain the significance of obtaining representative soil samples in the field. [4 marks]
- (b) Explain the consideration involved in nutrient placement in various farming systems. [6 marks]
- (c) Discuss the conditions that make a soil fertile. [5 marks]

QUESTION FIVE

- (a) Suppose you receive information that obtain good yields from a new hybrid maize variety in the Chuka University Farm, you need to apply 68 kg of phosphorus per hectare. How many kilograms of single super phosphate (SSP: 0:21:0) should you apply to obtain optimum maize yields? [6 marks]
 - (b) Explain the essential functions of nitrogen in plants. [3 marks]
 - (c) Explain any six (6) soil conditions that lead to denitrification. [6 marks]
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