

CHUKA



UNIVERSITY

**UNIVERSITY EXAMINATIONS.**

**FIRST YEAR EXAMINATION FOR THE AWARD OF MASTER OF SCIENCE  
DEGREE IN AGRONOMY**

**SOIL 836: SOIL FERTILITY AND PLANT NUTRITION**

**STREAMS: M.Sc (AGRONOMY, HORT & SOIL SCI) Y1S1**

**TIME: 3 HOURS**

**DAY/DATE: WEDNESDAY 5/12/2018**

**2.30 P.M - 5.30 P.M.**

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**INSTRUCTIONS:**

- **ANSWER ALL QUESTIONS IN SECTION A AND ANY TWO QUESTIONS IN SECTION B**

**SECTION A**

**QUESTION ONE**

- (a) Discuss the sulphur deficiency symptoms on a wheat crop. [2 Marks]
- (b) Describe the systematic method of soil sampling on a cropped farm. [3 Marks]
- (c) Explain the significance of C: N ratio in agricultural productivity. [3 Marks]

**QUESTION TWO**

- (a) Explain the problems associated with salt damage in crops. [4 Marks]
- (b) The efficient use of fertilizers involves the adoption of farm practices that allow the crops to make the best possible use of the added fertilizers. Discuss these practices. [4 Marks]
- (c) Explain the conditions that determine whether there is net mineralization or net immobilization. [4 Marks]

**SECTION B**

**QUESTION THREE**

- (a) Calculate the amounts of N, P and K in 24:42:16 grade of fertilizer. [6 Marks]
- (b) Discuss conventional tillage as applied in agricultural productivity. [5 Marks]
- (c) Explain the fertilizer salt index of plants. [9 Marks]

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**QUESTION FOUR**

- (a) Using relevant examples, explain the hazards of over fertilization in cropping systems. [8 Marks]
- (b) Discuss rock phosphate (RP) as a fertilizer. [6 Marks]
- (c) Explain the fundamental ways plants uptake nutrients through their roots. [6 Marks]

**QUESTION FIVE**

- (a) Suppose you receive information that to obtain good yields from a new hybrid maize variety on the Chuka University Farm, you need to apply 76 kg of phosphorous per hectare. How many kilograms of single super phosphate (SSP: 0:21:0) should you apply to obtain optimum maize yields? [8 Marks]
- (b) Describe the sampling steps in plant tissue analysis. [6 Marks]
- (c) Explain the distinctions between manure and commercial fertilizers. [6 Marks]

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