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University Examinations 2024/2025

THIRD YEAR, FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN AGRICULTURAL EDUCATION AND EXTENSION, BACHELOR OF SCIENCE IN EDUCATION SCIENCE.

AAA 3300: PLANT NUTRITION, SOIL FERTILITY AND FERTILIZERS

DATE: JANUARY 2025

TIME: 2 HOURS

INSTRUCTIONS:

1. Answer Question ONE, and any other TWO

QUESTION ONE (30 MARKS)

- a) Explain how soil temperature influence plant mineral uptake
- b) Define the following terms:
 - i. Fertilizer carrier (2 Marks)
 - ii. Fertilizer starter (2 Marks)
 - iii. Plant nutrition (2 Marks)
- c) Determine how much of each fertilizer one tone of 10 - 10 - 20 can be blended from the following carriers
(6 Marks)
 - i. Ammonium nitrate 33 - 0 - 0
 - ii. Triple superphosphate 0 - 46 - 0
 - iii. Muriate of potash 0 - 0 - 60
- d) Explain the significance of pH to plant nutrient availability (4 Marks)
- e) Giving examples, describe the beneficial elements of plant (5 Marks)
- f) Describe the benefits of lime application in crop production (5 Marks)



QUESTION TWO (20 MARKS)

- a) Explain the application of cation exchange capacity (CEC) of soil (8 Marks)
- b) Discuss three methods of fertilizer topdressing (12 Marks)

QUESTION THREE (20 MARKS)

- a) Discuss three forms of fertilizer available for use by the plants (15 Marks)
- b) Three kilograms of potash per 1000 m² is recommended after the soil test. The grade fertilizer available is 5 - 10 - 15. How much of this fertilizer will be applied to supply the commended amount? (5 Marks)

QUESTION FOUR (20 MARKS)

- a) Explain five factors that influence fertilizer selection (10 Marks)
- b) Describe the zone and grid methods of soil sampling (10 Marks)

