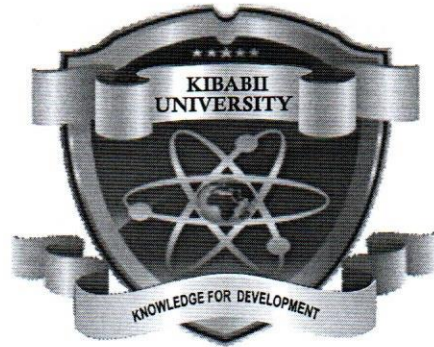


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(Knowledge for Development)

KIBABII UNIVERSITY
UNIVERSITY EXAMINATIONS
2017/2018 ACADEMIC YEAR

THIRD YEAR 1ST SEMESTER
SPECIAL/SUPPLEMENTARY EXAMINATION

FOR THE DEGREE OF BACHELOR OF SCIENCE AGRICULTURE AND BIOTECHNOLOGY, BACHELOR OF SCIENCE AGRICULTURE EDUCATION AND EXTENSION, BACHELOR OF SCIENCE AGRICULTURE ECONOMICS AND RESOURCE MANAGEMENT & BACHELOR OF EDUCATION SCIENCE

COURSE CODE: SAB 311

COURSE TITLE: SOIL FERTILITY AND PLANT NUTRITION

DATE: 4TH OCTOBER 2018

TIME: ³⁻⁵ ~~11:30 - 1:30~~ PM

INSTRUCTIONS TO CANDIDATES

Answer Question ONE and any other TWO Questions.

TIME: 2 Hours

This paper consists of 3 printed pages. Please Turn Over

KIBU observes ZERO tolerance to examination cheating 

1. a) Define the following terms as used in soil fertility and plant nutrition:

- i) Soil Fertility (1 Mark)
- ii) Hidden Hunger (1 Mark)
- iii) Symplasm (1 Mark)
- iv) Necrosis (1 Mark)
- v) Electrochemical Potential (1 Mark)

b) Explain the importance of the following equipments/chemicals that was used during the soil fertility practicals:

- i) Electric Shaker (1 Mark)
- ii) Buffer 4 (1 Mark)
- iii) Standard sample (1 Mark)
- iv) Ratio of 1:2.5 (1 Mark)
- v) Soil sieving (1 Mark)

c) Briefly explain photophosphorylation (1 mark)

d) i) Explain the term Small-holder farmer (2 marks)

ii) Briefly explain compound fertilizers (2 marks)

iii) State the fate of NO_3 when released to the soil (4 marks)

iv) State the deficiency symptoms of Molybdenum element in plants (2 marks)

e) i) Define C:N Ratio (1 marks)

ii) Describe the main fertilizer placement methods (8 Marks)

2. Differentiate between C3 and C4 plants (20 marks)

3. a) Describe various ways of minimizing losses of added nutrients (15 marks)

b) Describe the procedure of collecting a composite sample (5 marks)

4. a) With the help of equations, explain the following Nitrogen cycle processes:

i) Volatilization (2 Marks)

ii) Nitrification (2 Marks)

iii) Immobilization (2 Marks)

iv) Ammonification (2 Marks)

v) Denitrification (2 Marks)

b) Differentiate between Phosphorus fixation and Potassium fixation (4 marks)

c) Muriate of Potash contains 60% K_2O . What percent potassium (K) does this correspond?
(6 marks)