MACHAKOS UNIVERSITY

University Examinations for 2019/2020 Academic Year

SCHOOL OF AGRICULTURAL SCIENCES

DEPARTMENT OF AGRICULTURAL EDUCATION AND EXTENSION

SECOND YEAR FIRST SEMESTER EXAMINATION FOR

BACHELOR OF SCIENCE IN AGRICULTURAL EDUCATION AND EXTENSION

SOL 201: SOIL FERTILITY AND PLANT NUTRITION

DATE: 28/11/2019 **TIME: 2.00-4.00 PM**

INSTRUCTIONS;

Answer *ALL* questions from Section A and any other *TWO* from Section B:

SECTION A: COMPULSORY: (30 MARKS)

QUESTION ONE (30 MARKS)

a)	Explain THREE differences between soil fertility and soil productivity	(3 marks)
b)	Explain FOUR functions of phosphorus in a plant	(4 marks)
c)	Describe FOUR deficiency symptoms of copper in a plant	(4 marks)
d)	Explain FOUR functions of organic matter to the soil	(4 marks)
e)	Giving an example in each case, explain the two categories of organic matter	(4 marks)
f)	Explain FOUR factors that determine the method of fertilizer application	(4 marks)
g)	Describe the THREE types of inorganic fertilizers	(3 marks)
h)	Describe FOUR ways of application of solid inorganic fertilizers	(4 marks)

SECTION B: Answer any TWO Questions (40 Marks)

QUESTION TWO (20 MARKS)

a)	Discuss SIX advantages of organic fertilizers	(12 marks)
b)	Discuss FOUR practices involved in maintenance of organic matter in the soil	(8 marks)

QUESTION THREE (20 MARKS)

a) Discuss SIX factors affecting microbial activity in the soil (12 marks)

b) Describe the FOUR transformation processes involved in nutrient cycling (8 marks)

QUESTION FOUR (20 MARKS)

a) Describe the role of the following plant nutrients

i. Magnesium (3 marks)

ii. Potassium (3 marks)

iii. Iron (3 marks)

iv. Manganese (3 marks)

b) For each of the plant nutrient in Question 4 (a) above, describe the deficiency symptoms (8 marks)

QUESTION FIVE (20 MARKS)

Giving examples in each case, describe the role of the following microorganisms in the soil

a) Bacteria (5 marks)

b) Protozoa (5 marks)

c) Fungi (5 marks)

d) Algae (5 marks)