



# MACHAKOS UNIVERSITY

University Examinations for 2020/2021 Academic Year

SCHOOL OF AGRICULTURAL SCIENCES

DEPARTMENT OF AGRICULTURAL EDUCATION AND EXTENSION

FIRST YEAR SPECIAL/ SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF SCIENCE IN AGRICULTURAL EDUCATION AND EXTENSION

SOL 100: INTRODUCTION TO SOIL SCIENCE

DATE: 25/3/2021

TIME: 8.30-10.30 AM

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## **INSTRUCTIONS:**

**Instructions: Answer question ONE and any other TWO questions**

### **QUESTION ONE**

- a) Explain FOUR factors that influence the rate of humification (4 marks)
- b) Describe FOUR agents involved in transportation of parent material (4 marks)
- c) Explain FOUR factors that influence soil structure development in soils (4 marks)
- d) Describe THREE classifications of soil mineralogy composition (3 marks)
- e) Describe FOUR types of soil colloids (4 marks)
- f) Giving an example in each case, describe the FOUR subdivisions of soil fauna (4 marks)
- g) Explain THREE bacteria involved in mineral transformation (3 marks)
- h) Explain TWO major sources of charges on soil colloids (4 marks)

### **SECTION B: Answer any TWO Questions (40 Marks)**

#### **QUESTION TWO (20 MARKS)**

Explain how the following affect formation of soil

- a) Climate (10 marks)
- b) Time (10 marks)

**QUESTION THREE (20 MARKS)**

- a) Discuss the importance of soil structure in crop production (10 marks)
- b) Discuss **FIVE** ways in which mineral type affect soil behaviour (10 marks)

**QUESTION FOUR (20 MARKS)**

Discuss five principles of soil survey (20 MARKS)

**QUESTION FIVE (20 MARKS)**

Describe the following types of silicate clays

- a) 1:1 type of mineral (10 marks)
- b) 2:1 type of mineral (10 marks)