



MACHAKOS UNIVERSITY

University Examinations for 2019/2020 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: 21/01/2021

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 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

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)