



MACHAKOS UNIVERSITY

University Examinations for 2021/2022 Academic Year

SCHOOL OF AGRICULTURAL SCIENCES

DEPARTMENT OF AGRICULTURAL EDUCATION AND EXTENSION

FIRST YEAR SECOND SEMISTER EXAMINATION FOR

BACHELOR OF SCIENCE IN AGRICULTURAL EDUCATION AND EXTENSION

BACHELOR OF EDUCATION (SCIENCE)

BACHELOR OF EDUCATION (SPECIAL NEEDS)

SOL 100: INTRODUCTION TO SOIL SCIENCE

DATE: 26/5/2022

TIME: 8.30-10.30 AM

INSTRUCTIONS:

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

SECTION A: COMPULSORY: (30 MARKS)

QUESTION ONE (30 MARKS)

- Explain two ways a farmer can increase cation exchange capacity (CEC) of the soil in his farm. (4 marks)
- Explain four factors that affect soil temperature. (4 marks)
- Describe the FOUR classifications of soil structure based on the grade of soil. (4 marks)
- Explain four factors that influence the rate of humification. (4 marks)
- Describe the FOUR transformation processes in nutrient cycling. (4 marks)
- Describe the FOUR subdivisions of soil fauna. (4 marks)
- Explain three roles of protozoans in the soil forming process. (3 marks)
- Explain any three characteristics of kaolinite. (3 marks)

SECTION B: Answer any TWO Questions (40 Marks)

QUESTION TWO (20 MARKS)

- a) Discuss FIVE things a farmer can do to boost microorganisms in the soil. (10 marks)
- b) Discuss two ways in which time affects the soil forming process. (10 marks)

QUESTION THREE (20 MARKS)

- a) Discuss five ways in which soil texture affects crop production. (10 marks)
- b) Discuss five ways in which type of mineral affect soil behaviour. (10 marks)

QUESTION FOUR (20 MARKS)

Describe the following soil forming processes

- a) Mineral dissolution (5 marks)
- b) Greying (5 marks)
- c) Cheluviation (5 marks)
- d) Podzolation (5 marks)

QUESTION FIVE (20 MARKS)

- a) Explain any five types of soil surveys based on scale of mapping. (10 marks)
- b) Explain five factors that influence soil structure development. (10 marks)