

UNIVERSITY OF SWAZILAND
DEPARTMENT OF GEOGRAPHY, ENVIRONMENTAL SCIENCE AND PLANNING
MAIN EXAMINATION, MAY 2018
BSc, B. Ed.

TITLE OF PAPER: APPLIED SOIL SCIENCE

COURSE NUMBER: GEP 433

TIME ALLOWED: THREE (3) HOURS

INSTRUCTIONS: 1. ANSWER THREE QUESTIONS
2. QUESTION 1 IS COMPULSORY
3. ILLUSTRATE YOUR ANSWERS WITH
EXAMPLES AND CLEARLY DRAWN DIAGRAMS
WHERE APPROPRIATE

ALLOCATION OF MARKS: QUESTION 1 (COMPULSORY) CARRIES
40 MARKS WHILE THE REST CARRY 30
MARKS EACH

THIS PAPER SHOULD NOT BE OPENED UNTIL PERMISSION IS GRANTED BY
THE INVIGILATOR

GEP 433: APPLIED SOIL SCIENCE – MAY 2018

SECTION A: COMPULSORY

QUESTION 1

- a) Discuss the following chemical parameters of soils in relation to their applicability to agriculture:
- i). pH (5 marks)
 - ii). CEC (5 marks)
- b) Discuss the following properties of soils in relation to their applicability to engineering (civil or geotechnical):
- i). Permeability (5 marks)
 - ii). Compressibility (5 marks)
- c) b) Using examples discuss the applications of soil science in the following fields:
- i). Environmental engineering (10 marks)
 - ii). Agriculture (10 marks)
- (40 Marks)**

SECTION B: ANSWER ANY TWO QUESTIONS

QUESTION 2

Discuss all the factors influencing soil formation and how they interact in the development of different soils around the world.

(30 Marks)

QUESTION 3

- a) Compare and contrast between a master soil horizon and a diagnostic horizon. (10 marks)
- b) Discuss all master horizons and indicate their significance to the development of a pedon (20 marks)
- (30 Marks)**

QUESTION 4

- a) Outline the differences between a Detailed Soil Survey and a Detailed Reconnaissance Soil Survey and give examples where each one can be used. (15 marks)
- b) Outline and discuss the three major aspects to the field mapping key used in soil survey. (15 marks)
- (30 Marks)**

QUESTION 5

Illustrate your understanding of soil classification systems by discussing World Reference Base and Soil Taxonomy.

(30 Marks)