

UNIVERSITY OF SWAZILAND
DEPARTMENT OF GEOGRAPHY, ENVIRONMENTAL SCIENCE AND PLANNING
FINAL EXAMINATION, MAY 2017
BSc, B. Ed.

TITLE OF PAPER: APPLIED SOIL SCIENCE

COURSE NUMBER: GEP433

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**

GEP433: APPLIED SOIL SCIENCE – MAY 2017

SECTION A: COMPULSORY

QUESTION 1

- a) Discuss the following terms of soil in relation to soil classification systems
- i. Soil moisture regimes. (5 marks)
 - ii. Soil permeability. (5 marks)
- b) Using examples, discuss the applications of soil science in the following fields:
- i. Geotechnical engineering. (5 marks)
 - ii. Environmental engineering. (5 marks)
 - iii. Forestry. (5 marks)
- c) 'In farming, farmers are generally interested in the soil's properties'. Discuss these properties of soil in relation to their applicability to farming. (15 marks)
- (40 Marks)**

SECTION B: ANSWER ANY TWO QUESTIONS

QUESTION 2

'One of the functions of soil is as a medium for construction'. Discuss the various soil properties that support this statement. (30 Marks)

QUESTION 3

'Soil erosion is a major threat to the soils of Swaziland'. Discuss this issue, with examples, in relation to:

- a) The types of soil erosion in Swaziland. (10 marks)
 - b) The main causes of erosion. (10 marks)
 - c) Erosion hazard assessment and mitigation. (10 marks)
- (30 Marks)**

QUESTION 4

Discuss the factors influencing soil formation and how they interact in the development of different soils around the world. (30 Marks)

QUESTION 5

Compare and contrast between the following soil classification systems: World reference base, Taxonomic system for South Africa and Soil taxonomy. (30 Marks)