

THE UNIVERSITY OF SWAZILAND

FINAL EXAMINATION 2011

B. Sc. IV

TITLE OF PAPER : APPLIED SOIL SCIENCE

COURSE NUMBER : GEP 433

TIME ALLOWED : THREE [3] HOURS

INSTRUCTIONS : ANSWER QUESTION ONE [1] WHICH IS  
A COMPULSORY QUESTION AND ANY  
TWO [2] QUESTIONS OF YOUR  
CHOICE

MARKS ALLOCATED : QUESTION ONE [1] CARRIES FORTY  
[40] MARKS AND THE OTHER  
QUESTIONS CARRY THIRTY [30]  
MARKS EACH.

THIS PAPER SHOULD NOT BE OPENED UNTIL PERMISSION  
HAS BEEN GRANTED BY THE CHIEF INVIGILATOR.

**SECTION A: COMPULSORY QUESTION**

**QUESTION 1**

a) Give brief definitions of the following terms and phrases:

- i) Edaphology [5]
- ii) Soil [5]
- iii) Soil texture [5]
- iv) Soil structure [5]

b) Briefly discuss the following soil forming factors:

- i) Organisms [5]
- ii) Climate [5]
- iii) Time [5]
- iv) Topography [5]

[40]

**SECTION B**

**ANSWER ANY TWO QUESTIONS FROM THIS SECTION**

**QUESTION 2**

The weathering process is said to be the most important precursor of soil development among the known pedogenic soil forming processes. Identify and discuss the main points of this process.

[30]

**QUESTION 3**

Discuss the mechanisms that bring about the formation of the following parent materials including the characterization of such materials.

- i) Alluvium [10]
  - ii) Colluvium [10]
  - iii) Loess [10]
- [30]**

**QUESTION 4**

Briefly discuss the following phrases:

- i) Soil horizon [10]
  - ii) The E-horizon [10]
  - iii) The C-horizon [10]
- [30]**

**QUESTION 5**

Discuss the applications of soil survey in sparsely settled or empty areas under the following topics:

- i) Project feasibility [10]
  - ii) Resource inventory and project location [10]
  - iii) Project planning [10]
- [30]**