

**UNIVERSITY OF SWAZILAND
DEPARTMENT OF GEOGRAPHY, ENVIRONMENTAL SCIENCE AND
PLANNING
FINAL EXAMINATION, DECEMBER 2008**

TITLE OF PAPER: APPLIED SOIL SCIENCE

COURSE CODE: GEP 433

TIME ALLOWED: THREE HOURS

**INSTRUCTIONS: ANSWER QUESTION ONE AND ANY
OTHER TWO QUESTIONS FROM
SECTION B**

**MARKS ALLOCATION: QUESTION 1 CARRIES 40 MARKS. THE
OTHER QUESTIONS CARRY 30 MARKS
EACH.**

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BY THE INVIGILATOR**

SECTION A

QUESTION 1 (COMPULSORY)

The University of Swaziland is planning a new three storey classroom block on a newly acquired piece of land that is covered with expansive clays. Assuming you are the soil scientist in the consultancy firm which has been hired to carry out feasibility studies for the project.

- a) Would you recommend that the project go ahead on that piece of land? Explain your answer. (10 marks)
- b) If this same piece of land was to be used for the construction of an airport runway, would you make the same recommendations as that made to the university? Explain your answer. (5 marks)
- c) If you were to map the soils on the piece of land for arable agricultural purposes, describe the soil properties you would include in the legend of the soil map, explaining their significance in arable agriculture. (15 marks)
- d) Which of these properties would not be considered in A and B above? Explain. (10 marks)
(40 marks)

SECTION B

ANSWER ANY TWO QUESTIONS

QUESTION 2

"The practical purpose of soil survey is to enable more numerous, more accurate and more useful predictions to be made for specific purposes than could have been made otherwise" (Dent and Young 1980:1). Discuss the validity of this statement. (30 marks)

QUESTION 3

- a. Describe the offsite effects of erosion in Swaziland and the possible economic consequences in the country. (20 marks)
- b. Suggest and explain methods which may be used to combat these consequences. (10 marks)
(30 marks)

QUESTION 4

Discuss the role of soil science in the field of forestry and environmental engineering. (30 marks)

QUESTION 5

- a. Discuss the advantages and disadvantages of indigenous soil classification over modern soil classification systems. (10 marks).
- b. (i) If you are hired by a small scale farmer to survey a piece of land for arable agriculture, which system of soil classification would you use? Explain why you have chosen that system. (10 marks).
- (ii) Considering that this is only your first year in the job, which sampling technique would you prefer? Explain. (10 marks)
(30 marks)