UNIVERSITY OF SWAZILAND
DEPARTMENT OF GEOGRAPHY, ENVIRONMENTAL SCIENCE AND PLANNING
FINAL EXAMINATION, MAY 2009

TITLE OF PAPER:	**APPLIED PHYSICAL GEOGRAPHY**
COURSE CODE:	**GEP 227**
TIME ALLOWED:	**THREE HOURS**
INSTRUCTIONS:	**ANSWER QUESTION ONE AND ANY OTHER TWO QUESTIONS**
MARKS ALLOCATED:	**QUESTION 1 CARRIES 40 MARKS. THE OTHER QUESTIONS CARRY 30 MARKS EACH.**

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SECTION A

QUESTION 1 (COMPULSORY)

a. Using illustrations only, explain how the following pedogenic processes result in the differentiation of soil horizons and state the diagnostic horizon that is produced in each case.
   i. Podzolization (10 marks)
   ii. Laterization (10 marks)
   iii. Calcification (10 marks)

b. Explain the role of climate and organic matter in the development of the diagnostic horizons indicated in 'a' above. (10 marks)

[40 MARKS]

SECTION B

ANSWER ANY TWO QUESTIONS

QUESTION 2

a. Explain what you understand by soil water potential. (10 marks)

b. Describe how soil water potential affects the movement of water in soils. (20 marks)

(30 marks)

QUESTION 3

a. Describe the mineralogical organization of 2:1 and 1:1 type clays. (15 marks)

b. Explain how the mineral structure of 2:1 and 1:1 type clays affect their capacity to adsorb cations in the soil. (15 marks)

(30 marks)

QUESTION 4

a. Describe the various activities that may occur at convergent plate boundaries. (20 marks)

b. Explain how these activities may result in the formation of the following:
   i. Tsunamis (5 marks)
   ii. Fold mountains (5 marks)

(30 marks)

QUESTION 5

Explain how the following soil properties affect its function as a medium for plant growth, and for the support of structures.

i. Cation exchange capacity **(10 marks)**
ii. Texture **(10 marks)**
iii. pH **(10 marks)**

(30 marks)