

COURSE CODE: GEP 412 [M] 2005/2006

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UNIVERSITY OF SWAZILAND

FINAL EXAMINATION PAPER 2005 / 2006

B.Sc. YEAR 4 GEP. OPTION B.

COURSE CODE: GEP 412

COURSE TITLE: SOIL SURVEY AND INTERPRETATION

TIME ALLOWED: THREE [3] HOURS

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

THIS PAPER CONTAINS FOUR [4] PAGES INCLUDING THE COVER PAGE

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SECTION A

QUESTION 1 [COMPULSORY]

- a) Application of soil surveys in developed areas are conducted for the following listed purposes. Briefly make notes for each listed purpose:
- i) Research [5]
 - ii) Planning [5]
 - iii) Management [5]
- b) When conducting a soil survey. A number of parameters must be considered. Discuss some of such parameters listed below:
- iv) Scale [5]
 - v) Density of observations [5]
- c) Aerial photographs are said to be having two principal uses in soil survey, and these are said to be of equal status. Write short notes on the two uses. [10]
- d) Briefly discuss the differences between an aerial photograph and a topographical map. [5]

(40 marks)

SECTION B [Answer any two questions]

QUESTION 2

- a) Explain how a pit for soil profile morphological characterization is identified and prepared. [10]
- b) Soil profile morphological characterization is accomplished through using a number of physical parameters. Discuss any five [5] of the parameters. [20]

(30 marks)

QUESTION 3

- a) Discuss the three land capability divisions used for land use planning in Swaziland. [15]
- b) Identify any three [3] stakeholders and explain how they use soil survey and interpretation information. [15]

(30 marks)

QUESTION 4

- a) Discuss the characteristics of the following master soil horizons:
 - i) B-horizon [5]
 - ii) C-horizon [5]
 - iii) A-horizon [5]
- b) Identify and discuss any three categories of the USA Comprehensive Soil Classification System (Soil Taxonomy, 1975). [15]

(30 marks)

QUESTION 5

- a) Give very specific characteristics of the following soil orders:
 - i) Gelisols [2]
 - ii) Histosols [2]
 - iii) Oxisols [2]
 - iv) Vertisols [2]
 - v) Entisols [2]
- b) Name soil mapping units used in the following countries for mapping soils:
 - i) South Africa [5]
 - ii) Swaziland [5]

c) Compare and contrast the following soil orders:

- i) The alfisols and the ultisols [5].
- ii) Entisols and mollisols [5]

(30 marks)