



1ST SEM 2009/2010

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**UNIVERSITY OF SWAZILAND
SUPPLEMENTARY EXAMINATION PAPER**

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**PROGRAMME: BACHELOR OF SCIENCE YEAR II IN AGRICULTURAL
AND BIOSYSTEMS ENGINEERING, AGRICULTURAL
EDUCATION, AGRONOMY, ANIMAL SCIENCE AND
HORTICULTURE**

COURSE CODE: CP 201/203

TITLE OF PAPER: INTRODUCTORY SOIL SCIENCE

TIME ALLOWED: TWO (2) HOURS

INSTRUCTIONS: ANSWER ANY FOUR (4) QUESTIONS

**DO NOT OPEN THIS PAPER UNTIL PERMISSION HAS BEEN GRANTED BY
THE CHIEF INVIGILATOR**

QUESTION 1

- (a) Define or give brief descriptions of the following: (Each answer carries **2 marks**)
- (i) Soil genesis
 - (ii) Field capacity
 - (iii) Buffering capacity
 - (iv) Eluviation
 - (v) Cation exchange capacity
- (b) Define “soil horizon” and indicate how horizons are identified and named in a soil profile. **[4]**
- (c) Using an appropriate diagram, illustrate the major soil horizons in a representative mineral soil profile and describe the properties of each. **[11]**

QUESTION 2

- (a) Outline the significance of good soil structure in crop production. **[7]**
- (b) Discuss the management strategies you would recommend to improve or maintain good soil structure **[18]**

QUESTION 3

- (a) Define the term “humus” **[4]**
- (b) Discuss the properties of organic matter which you consider important when soils are used for crop production. **[21]**

QUESTION 4

- (a) Outline the importance of soil water in soil science. **[8]**
- (b) Discuss the management of soil water in arable farming. **[17]**

QUESTION 5

- (a) What is a factor of soil formation? **[5]**
- (b) Discuss the factors of soil formation and comment on the importance of each in the formation of soils in your named country. **[20]**