



**2<sup>nd</sup> SEM. 2011/2012 (M)**

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**UNIVERSITY OF SWAZILAND**

**FINAL EXAMINATION PAPER**

**PROGRAMME: BACHELOR OF SCIENCE IN AGRONOMY YEAR IV**

**COURSE CODE: CP 406**

**TITLE OF PAPER: SOIL MANAGEMENT**

**TIME ALLOWED: TWO (2) HOURS**

**INSTRUCTIONS: ANSWER ANY FOUR (4) QUESTIONS**

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THE CHIEF INVIGILATOR**

**QUESTION 1**

Discuss the major management requirements of soils in the middleveld and highveld of Swaziland for increased crop yields. [25]

**QUESTION 2**

- (a) What is an acid-sulphate soil? [3]
- (b) Outline the genesis of acid-sulphate soils. [8]
- (c) Discuss the important constraints presented by acid-sulphate soils to increased crop yields and recommend strategies to overcome these challenges. [14]  
[25]

**QUESTION 3**

- (a) Outline the development of saline and sodic soils and indicate their key diagnostic features. [10]
- (b) Give an account of how the soil conditions in (a) above can be prevented? [15]  
[25]

**QUESTION 4**

- (a) Distinguish between “Effective cation exchange capacity” and “Total cation exchange capacity”. [3]
- (b) Highlight the charge characteristics of tropical and subtropical soils clearly indicating the soil materials responsible for such charge and the implications these characteristics would have on plant nutrition. [10]
- (c) Suggest some management interventions you would recommend to increase crop yields in tropical and subtropical soils. [12]  
[25]

**QUESTION 5**

- (a) Distinguish between Lowland and Upland rice production systems. [5]
- (b) In land preparation for lowland rice production system, there are certain changes in physical and chemical properties of a soil. Discuss these changes. [10]
- (c) The lowland rice production system is considered to be labour intensive and yet it is the most popular among rice producers. Explain the reasons for this. [10]  
[25]

**QUESTION 6**

- (a) Define the term "soil pollution". [3]
- (b) Discuss the reclamation procedures you would recommend for:
- (i) Herbicide contaminated soils. [11]
- (ii) Heavy metal contaminated soils. [11]  
[25]