

2ND SEM.2016/2017 (M)



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UNIVERSITY OF SWAZILAND

FINAL EXAMINATION PAPER

PROGRAMME: BACHELOR OF SCIENCE IN AGRONOMY YEA IV

COURSE CODE: CP 406

TITLE OF PAPER: SOIL MANAGEMENT

TIME ALLOWED: TWO (2) HOURS

**INSTRUCTIONS: ANSWER QUESTION ONE (1) WHICH IS
COMPULSORY AND ANY OTHER THREE (3) QUESTIONS.**

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GRANTED BY THE CHIEF INVIGILATOR**

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QUESTION 1 (Compulsory Question)

Discuss the role of agroforestry technologies in the management of soils for increased crop yields. [25]

QUESTION 2

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

QUESTION 3

- a) Differentiate between soil salinity and sodicity and outline the possible causes of these soil conditions. [10]
- (b) Discuss the strategies that can be recommended to improved crop yields in saline heavy textured soils and indicate the relative success of each strategy. [15]
[25]

QUESTION 4

- (a) What is the essential difference between exchangeable and non-exchangeable acidity? [5]
- (b) Outline the nature of charge in tropical and subtropical soils and indicate which soil materials are responsible for such charge. [10]
- (c) Discuss the implications of the charges in (b) above on soil properties and consequent management requirements. [10]
[25]

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QUESTION 5

Discuss the major management requirements of soils in the Middleveld and Highveld of Swaziland for increased crop yields. **[25]**

QUESTION 6

- (a) What is an acid-sulphate soil? [3]
 - (b) Outline the genesis of an acid-sulphate soil. [7]
 - (b) Discuss the challenges posed by acid-sulphate soils to increased crop yields and recommend strategies that can improve crop yields in such soils. [15]
- [25]**