



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 QUESTION ONE (1) WHICH IS
COMPULSORY AND ANY OTHER THREE QUESTIONS.**

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GRANTED BY THE CHIEF INVIGILATOR**

QUESTION 1 (Compulsory Question)

- (a) Discuss the effects of a long cycle of pineapple production on chemical and physical properties of a soil and on yields of preceding crops. [15]
- (b) What strategies can be recommended to increase soil productivity in a piece of land previously under a long cycle of pineapple production? [15]
- (c) Discuss the factors which limit the number of ratoons in the production of pineapples. [10]

[40]

QUESTION 2

- (a) Explain the various ways of characterizing saline and sodic soil conditions. [5]
- (b) Explain the processes in which soil salinity and sodicity conditions are developed. [5]
- (c) What strategies can be recommended to increase soil productivity in such soil conditions? [10]

[20]

QUESTION 3

- (a) Distinguish between “effective cation exchange capacity” and “total cation exchange capacity” [2]
- (b) Discuss the charge characteristics of tropical and subtropical soils indicating the soil materials responsible for such charges and the implications these characteristics have on plant nutrition. [8]
- (c) What management interventions should be recommended to increase crop yields in tropical and subtropical soils? [10]

[20]

QUESTION 4

Discuss the major management requirements of soils in the middleveld and highveld of Swaziland for increased crop yields. [20]

QUESTION 5

Discuss the role of agroforestry in soil management for increased crop yields. [20]

QUESTION 6

- (a) What is an acid-sulphate soil? [3]
- (b) Explain the genesis of these soils. [7]
- (c) Discuss the main constraints presented by acid-sulphate soils to increased crop yields and recommend strategies to address these challenges. [10]
[20]