



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 ANY FOUR QUESTIONS

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QUESTION 1

(a) Distinguish among the types of salt-affected soils and explain the one that has major detrimental effects on soil properties and plant growth.

[10]

(b) Discuss the strategies that can be recommended to increase crop yields in saline soils.

[15]

[25]

QUESTION 2

(a) What is the main difference between Lowland and Upland Rice production systems?

[5]

(b) In land preparation for lowland rice production there are changes in the properties of soils. Discuss these changes in soil properties and indicate how they influence the yield of rice.

[10]

(c) Between the two systems of rice production, lowland rice production is viewed as the most 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) Discuss the major soil management requirements of soils in the middleveld and highveld of Swaziland for increased crop yields.

[25]

QUESTION 4

(a) Define the term "soil pollution"

[5]

(b) Discuss the reclamation procedures for the following soil situations and indicate the relative success of the reclamation procedures selected:

(i) Herbicide contaminated soils.

[10]

(ii) Heavy metal contaminated soils.

[10]

[25]

QUESTION 5

(a) Differentiate between 'exchangeable acidity' and "none exchangeable acidity"? [3]

(b) Give an equation for delta pH and indicate the importance of this parameter in soil science. [3]

(c) State the meaning and the reactions involved that give rise to the following parameters:

(i) A positive delta pH [3]

(ii) A negative delta pH [3]

(c) Suggest possible management interventions that can be recommended to increase crop yields in tropical and sub-tropical environments. [13]
[25]

QUESTION 6

Discuss the soil properties that are ideal for sugarcane production and their subsequent management requirements. [25]