



SUPPLEMENTARY 2010/2011

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UNIVERSITY OF SWAZILAND

SUPPLEMENTARY EXAMINATION PAPER

**PROGRAMME: BACHELOR OF SCIENCE YEAR THREE IN
AGRICULTURAL EDUCATION, AGRONOMY AND
HORTICULTURE**

COURSE CODE: CP 302

TITLE OF PAPER: CROP NUTRITION

TIME ALLOWED: TWO AND HALF (2.5) HOURS

**INSTRUCTIONS: ANSWER FOUR (4) QUESTIONS WITH AT LEAST ONE
QUESTION FROM EACH SECTION**

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CHIEF INVIGILATOR**

SECTION 1: SOIL CHEMISTRY

QUESTION 1

(a) Discuss in detail the properties of organic matter which are important when soils are used for crop production. **[15]**

(b) Highlight the environmental effects of organic matter in soils **[10]**

QUESTION 2

(a) Discuss the charge characteristics of tropical and subtropical soils and highlight the implications of this charge on nutrient availability to plants. **[15]**

(b) What strategies would you recommend to increase the cation exchange capacity of the soils in (a) above? **[10]**

QUESTION 3

Discuss the interactions of anions with sesquioxides in soils and highlight the implications of these interactions in the mineral nutrition of plants. **[25]**

SECTION 2: CROP NUTRITION

QUESTION 4

(a) Discuss the ways in which nitrogen may be added to soils. **[15]**

(b) What strategies would you recommend to improve the availability and utilization of nitrogen by plants. **[10]**

QUESTION 5

Discuss the role of micronutrients in crop production.

QUESTION 6

(a) Highlight the transformations of phosphorus in soils and comment on the implications of such transformations on phosphorus nutrition of plants. **[6]**

(b) Discuss the factors which influence the availability of phosphorus to plants in soils and indicate the strategies you would recommend to increase the availability of phosphorus **[19]**