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SUPPLEMENTARY 2016/2017

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UNIVERSITY OF SWAZILAND

SUPPLEMENTARY EXAMINATION PAPER

**PROGRAMMES: BACHELOR OF SCIENCE YEAR 3 IN AGRICULTURAL
EDUCATION, AGRONOMY AND HORTICULTURE**

COURSE CODE: CP 302

TITLE OF PAPER: CROP NUTRITION

TIME ALLOWED: TWO (2) HOURS

INSTRUCTIONS: ANSWER ALL QUESTIONS.

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THE CHIEF INVIGILATOR**

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SECTION 1: SOIL CHEMISTRY

QUESTION 1

- (a) Outline the role of minerals in soil science [5]
- (b) Discuss in detail the factors which influence the stability of minerals in soils and comment on the effect these factors have on the properties of the soil. [20]

[25]

QUESTION 2

Discuss the effects of organic matter which are important when soils are used for crop production and comment on the effect organic matter has on the quality of the environment. [25]

SECTION 2: SOIL FERTILITY

QUESTION 3

- (a) Outline the various forms of potassium in soil and comment on the relative importance of each form in the potassium nutrition of plants. [6]
- (b) Discuss in detail the factors which influence the availability of potassium to plants in soil and comment on practical approaches that one would recommend to increase potassium availability in soil. [13]
- (c) Explain the following terms as used in soil fertility:
- (i) Chlorophobic plants
 - (ii) Luxury consumption [6]
 - (iii) Natrophilic plants

[25]

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QUESTION 4

(a) Explain the basis for the movement of nutrient elements to the vicinity of plant roots in soil. [5]

(b) (i) Discuss the transport mechanisms of nutrients from the soil mass to the vicinity of plant roots and the factors which influence these mechanisms. (ii) Comment on the relative importance of each mechanism for mobile and immobile nutrients. [20]
[25]