



**MASENO UNIVERSITY**  
**UNIVERSITY EXAMINATIONS 2016/2017**

**SECOND YEAR SECOND SEMESTER EXAMINATION FOR  
THE DEGREE OF BACHELOR OF SCIENCE IN SOIL SCIENCE AND  
PLANT NUTRITION WITH INFORMATION TECHNOLOGY**

**MAIN CAMPUS**

**ASS 205: PLANT NUTRITION**

Date: 13<sup>th</sup> June, 2017

Time: 12.00 - 3.00pm

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**INSTRUCTIONS:**

- Answer ALL Questions in section A and any other TWO in section B.



**SECTION A: Answer ALL questions in this section.**

**QUESTION 1:**

Explain the following in the context of Edaphology

[5 marks]

- (a) Solum
  - (b) Plant nutrition
  - (c) ~~Deficient plant nutrient element~~
  - (d) Ammonia compensation point
  - (e) Rhizosphere
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**QUESTION 2:**

Distinguish between the following:

[10 marks]

- (a) Short distance transport and radial transport in plants
  - (b) Synergism and antagonism in plant nutrition
  - (c) Symplasmic pathway and apoplasmic pathway
  - (d) Hydrostatic pressure and water potential
  - (e) Nutrient absorption and nutrient adsorption
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**QUESTION 3: Outline the following:**

[15 marks]

- (a) Nitrogen depression period
- (b) Criteria that define plant essential nutrient element
- (c) The influence of soil pH on Phosphorus availability
- (d) Fixation (entrapment) of ammonium ion by clay mineral
- (e) Three factors that influence solute uptake through the leaves

**SECTION B: Answer any TWO questions in this Section**

**QUESTION 4:**

[20 Marks]

Discuss long distance transport of nutrients in living plants

**QUESTION 5:**

[20 Marks]

Discuss the conditions under which foliar application of plant nutrients have comparative advantage over soil application.

**QUESTION 6:**

[20 Marks]

Discuss the physiological functions (roles) of the following nutrient elements in living plants:

- (a) Nitrogen
- (b) Potassium
- (c) Iron
- (d) Copper