



MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY

P.O. Box 972-60200 – Meru-Kenya.

Tel: 020-2069349, 061-2309217. 064-30320 Cell phone: +254 712524293, +254 789151411

Fax: 064-30321

Website: www.must.ac.ke Email: info@must.ac.ke

University Examinations 2015/2016

THIRDYEAR FIRST SEMESTER EXAMINATION FOR THE DEGREE OF
BACHELOR OF SCIENCE IN HORTICULTURE

AHS 2305: PLANT NUTRITION

DATE: NOVEMBER 2015

TIME: 2 HOURS

INSTRUCTIONS: Answer question *one* and any other *two* questions

QUESTION ONE (30 MARKS)

- Describe the role and functions of nitrogen(N) and phosphorus (P) as an essential nutrient element (10 Marks)
- In relation to nutrient deficiency symptoms, explain the mobility and immobility of nutrients in plants (6 Marks)
- Explain how nutrient ions are translocated through the root system (6 Marks)
- Differentiate between hidden hunger from luxury consumption of nutrients(4 Marks)
- Describe magnesium (Mg) as an activator and cofactor of enzymes. (4 Marks)

(QUESTION TWO (20 MARKS)

- Explain plant growth phenomena and relate this with nutrient concentration levels in plant tissue (10 Marks)
- Describe the following nutrient transformation and interaction:
 - Mineralization (3 Marks)
 - Immobilization (3 Marks)

iii) Nutrient uptake antagonism (4 Marks)

QUESTION THREE (20 MARKS)

- a) Explain how you would use plant tissue analysis for diagnosis of nutrient problems (10 Marks)
- b) Explain why it is not recommended to only use visual deficiency symptoms in diagnosing nutrient problems in crops (6 Marks)
- c) Describe the criteria for essential nutrient elements (4 Marks)

QUESTION FOUR (20 MARKS)

- a) Describe how the following soil characteristics affect nutrients uptake from the soil: (10 Marks)
- i) Texture
 - ii) Structure
 - iii) Moisture
 - iv) PH
 - v) Drainage
- b) Plant growth is a function of various environmental and growth factors which can be expressed as: $G=f(x_1, x_2, x_3, \dots, x_n)$ by considering Liebig's law of minimum, explain plant growth response to soil nutrient. (10 Marks)