



**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE & TECHNOLOGY**

**SCHOOL OF BIOLOGICAL AND PHYSICAL SCIENCES**

**DEPARTMENT OF BIOLOGICAL SCIENCES**

**UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF EDUCATION  
WITH IT**

**2<sup>nd</sup> YEAR 1<sup>ST</sup> SEMESTER 2016/2017 ACADEMIC YEAR**

**MAIN CAMPUS - REGULAR**

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**COURSE CODE: SBT 202**

**COURSE TITLE: PLANT MINERAL NUTRITION**

**EXAM VENUE: STREAM: (EDS)**

**DATE: EXAM SESSION:**

**TIME: 2 HOURS**

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**Instructions:**

- 1. Answer ALL questions in Section A and Any two questions in Section B**
  - 2. Candidates are advised not to write on question paper**
  - 3. Candidates must hand in their answer booklets to the invigilator while in the examination room**
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## **SECTION A: SHORT ANSWER QUESTIONS (30 MARKS)**

1. Explain the importance of studying Plant mineral nutrition for 2<sup>nd</sup> year Education science students. (2 marks)
2. State your understanding of the following: (i) Chlorosis (ii) Essential Nutrient (iii) soil productivity. (3 marks)
3. a) State the importance of the following nutrients in plants: i) Calcium ii) Lead. (2 marks)  
b) State two factors that affect mass flow of nutrients in the soil. (2 marks)
4. Explain why tropical rain forest plants do not require extensive rooting system compared to desert plants. (3 marks)
5. Root growth is necessary for three mechanisms of nutrient supply. Briefly discuss. (3 marks)
6. Using an illustration, state two differences between mobile and immobile nutrients. (3 marks)
7. Using an illustration, explain the relationship between plant growth and amount of available nutrient. (3 marks)
8. a) State one deficiency symptoms for each of the following nutrients: i) Potassium ii) Magnesium. (1 mark)  
b) Citing an example, explain the meaning of fertilizer grade and filler/carrier material. (2 marks)
9. Briefly explain why hydroponic systems are useful when studying plant mineral nutrition. (3 marks)
10. State two differences between quantitative and qualitative techniques of soil analysis. (2 marks)

## **SECTION B: ESSAY QUESTIONS (40 MARKS)**

11. Discuss the major sources of five micro and five macro nutrients. (20 marks).
12. Citing relevant examples, write an essay on the differences between Organic fertilizers and processed fertilizers. (20 marks).
13. JOOUST university botany students intend to carry out soil analysis for farming purposes:  
a) Outline the factors that influence the choice of a soil analysis method. (5 marks).

b) Discuss instrumental techniques of soil analysis. (15 marks).

14.

a) Discuss three passive process of nutrient absorption in plants. (12 marks)

b) Discuss the avenues of nutrient losses in plants. (8 marks).