



JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY
SCHOOL OF BIOLOGICAL AND PHYSICAL SCIENCES
UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF EDUCATION
(SCIENCE)
2ND YEAR 1ST SEMESTER 2013/2014 ACADEMIC YEAR
MAIN

COURSE CODE: SBT 202

COURSE TITLE: PLANT MINERAL NUTRITION

EXAM VENUE: LAB 5

STREAM: (Biological Sciences)

DATE: 17/04/14

EXAM SESSION: 9.00 – 11.00 AM

TIME: 2.00 HOURS

Instructions:

- 1. Answer ALL Questions in Section A and ANY other 2 questions in Section B**
- 2. Candidates are advised not to write on the question paper.**
- 3. Candidates must hand in their answer booklets to the invigilator while in the examination room.**

SECTION A (30 Marks)

1. State what you understand by the following: (i) Plant nutrition (ii) Soil fertility (iii) soil productivity. (3 marks)
2. Citing two examples explain the term essential element and highlight how it can be determined. (3 marks)
3. State three factors that affect mass flow of nutrients in the soil. (3 marks)
4. Root growth is necessary for three mechanisms of nutrient supply. Briefly discuss. (3 marks).
5. Using an illustration, state two differences between mobile and immobile nutrients. (3 marks).
6. Using an illustration, explain the relationship between plant growth and amount of available nutrient. (3 marks).
7. State two deficiency symptoms for each of the following nutrients: a) Nitrogen b) potassium c) Phosphorus. (3 marks).
8. Citing an example, explain the meaning of fertilizer grade and filler/carrier material. (3 marks).
9. Briefly explain why are hydroponic systems are useful when studying plant mineral nutrition. (3 marks).
10. State any three differences between quantitative and qualitative techniques of soil analysis. (3 marks)

SECTION B (20 Marks each)

11. 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)
12. Organic fertilizers normally have a lower concentration of nutrients and release nutrients more slowly compared to processed fertilizers. Discuss this statement citing relevant examples. (20 marks)
13. Discuss the avenues of nutrient losses in plants . (20 marks)
14. Citing five examples, discuss the major sources of micro and macro nutrients .(20 marks)