



JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE & TECHNOLOGY

SCHOOL OF BIOLOGICAL AND PHYSICAL SCIENCES

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

SECOND YEAR FIRST SEMESTER 2018/2019 ACADEMIC YEAR

MAIN CAMPUS - REGULAR

COURSE CODE: SBT 202
COURSE TITLE: PLANT MINERAL NUTRITION
EXAM VENUE: STREAM: (BED SC)
DATE: EXAM SESSION:
TIME: 2 HOURS

Instructions:

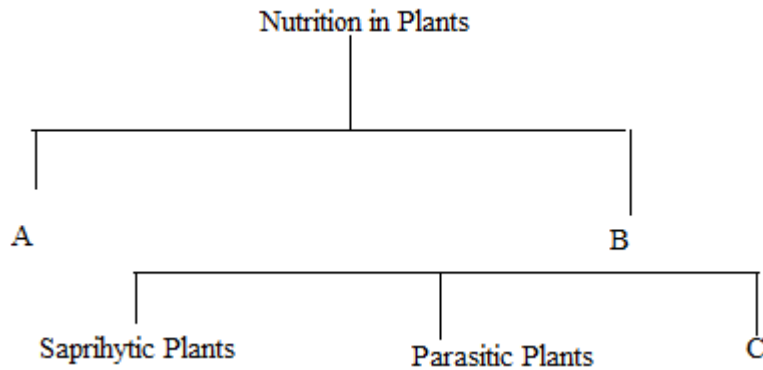
- 1. Answer ALL questions in Section A and Any two questions in Section B**
 - 2. Candidates are advised not to write on question paper**
 - 3. Candidates must hand in their answer booklets to the invigilator while in the examination room**
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SECTION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

1. A) Distinguish between 2:1 and 1:1 clays (2 mark)
 B) Explain how their structures influence mineral availability to plants (1 mark).
2. Fill in the Blank spaces appropriately (3 marks)

Symptom	Deficient Nutrient element
Stunting, scleromorphism, premature yellowing of leaves	a)
b)	P
Stunted growth, intercostal chlorosis of older leaves	c)

3. Describe three 3 ways by which nutrients are availed to plant roots. (3 marks)
4. What are the criteria of essentiality of mineral elements? (3 marks)
5. Describe how plants extract nutrient ions adsorbed on the surfaces of clay minerals and humic particles. (3 marks)
6. The diagram below and fill in the gaps. (3 marks)



7. Discuss 3 adjustments plants make to improve their efficiency of soil mineral uptake. (3 marks)
8. Define phylloplanes citing one example. Explain how they contribute to plant mineral nutrition. (3 marks)
9. Explain 3 practical challenges encountered when using nutrient media/solutions in plant nutrition studies. (3 marks)
10. List two ways of fertilizers are classified, providing an example in each case (3 marks).

SECTION B: ESSAY QUESTIONS (40 MARKS)

11. Discuss the role of soil properties in influencing availability of dissolved mineral ions in the soil solution. (20 marks).

12. Discuss the mechanisms employed by roots in the mobilization of chemically bound nutrients (20 marks).
13. Discuss the environmental challenges associated with the use of inorganic fertilizers in agriculture (20 marks)
14. Discuss mineral uptake into the plant cells (20 marks)