

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

FIRST YEAR EXAMINATION FOR THE AWARD OF MASTER OF SCIENCE IN CROP PROTECTION, MASTER OF SCIENCE IN HORTICULTURE AND MASTER OF SCIENCE IN PLANT BREEDING

BIOC 850: ADVANCES IN PLANT BIOCHEMISTRY

STREAMS: MSc (Y1S1)

TIME: 3 HOURS

DAY/DATE: TUESDAY 18/4/2023

11.30 A.M. – 2.30 P.M.

INSTRUCTIONS:

**Answer question ONE and any other TWO questions
Do not write anything on the question paper**

QUESTION ONE (20 marks)

- a) Explain the mechanism by which pineapple plants fix carbon dioxide thereby improving water use efficiency. (10 marks)
- b) Describe the biosynthesis of terpenoids. (10 marks)

QUESTION TWO (20 marks)

- a) Plants transform glucose into sucrose before transporting it to other parts. Discuss. (15 marks)
- b) Analyse the pathways by which nitrogen from the environment is introduced into biological systems. (5 marks)

QUESTION THREE (20 marks)

- a) Discuss two approaches that can be used to develop herbicide-resistant transgenic plants. (15 marks)

- b) Explain the rationale for using synthetic 2,4-dichlorophenoxyacetic acid as a herbicide. (5 marks)

QUESTION FOUR (20 marks)

- a) Give an overview of plant Citric Acid Cycle, detailing its stoichiometry. (16 marks)
- b) Based on free energy yield, predict the reactions that are irreversible or poorly reversible in the glycolysis pathway. (4 marks)
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