



**MASINDE MULIRO UNIVERSITY OF  
SCIENCE AND TECHNOLOGY  
(MMUST)**

**MAIN CAMPUS**

**UNIVERSITY EXAMINATIONS**

**2021/2022 ACADEMIC YEAR**

**FIRST YEAR SECOND SEMESTER EXAMINATIONS**

**(MAIN EXAMINATION)**

**FOR THE DEGREE IN AGRICULTURE, AGRIBUSINESS AND EXTENSION  
MANAGEMENT**

**COURSE CODE: ACR 101**

**COURSE TITLE: PLANT PHYSIOLOGY**

**DATE: 27/04/2022**

**TIME: 8-10 AM**

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**INSTRUCTIONS:**

*Answer ALL questions in section A (Compulsory) and any TWO in section B.*

**TIME: 2 hours**

**MMUST observes ZERO tolerance to examination cheating**

*This paper consists of THREE printed pages. Please Turn Over*

**SECTION A: Answer ALL questions)**

**QUESTION ONE (30 Marks)**

- a) Explain the following terms
  - (i) Chlorophyll fluorometry
  - (ii) Kautsky effect
  - (iii) Photophosphorylation
  - (iv) Photorespiration
  - (v) Osmotic systems (5 marks)
- b) State five factors that responses of plants to hormones depend on (5 marks)
- c) Describe the first law and second law of thermodynamics in relation to photosynthesis (5 marks)
- d) Briefly describe the process of phloem loading (5 marks)
- e) State the functions of glycolysis (5 marks)
- f) Briefly explain why photorespiration is light dependent (5 marks)

**SECTION B: (Answer any TWO questions)**

**QUESTION TWO (20 Marks)**

Describe the experiments which prove that organic molecules are translocated through the anatomy of the phloem tissue in plants.

**QUESTION THREE (20 Marks)**

Discuss the C<sub>3</sub>, C<sub>4</sub> and CAM photosynthesis citing specific importance to crop production.

**QUESTION FOUR (20 Marks)**

Describe the biochemical reactions in the matrix of the mitochondria during the Krebs cycle in plants.

**QUESTION FIVE (20 Marks)**

Discuss the functions of five plant secondary metabolites

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