



(University of Choice)

**MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY**

**MAIN CAMPUS**

**UNIVERSITY EXAMINATIONS**

**2021/2022 ACADEMIC YEAR**

**(Main Examination)**

**FOR THE DEGREE**

**OF**

**MASTER OF SCIENCE IN PLANT GENETICS AND BREEDING**

**COURSE CODE: APB 824**

**COURSE TITLE: PLANT PHYSIOLOGY & BIOCHEMICAL GENETICS**

**DATE: 25<sup>TH</sup> APRIL, 2022**

**TIME: 2-5 PM:**

**INSTRUCTIONS TO CANDIDATES**

Answer **ANY THREE** questions (60 Marks)

**Time: 3 hours**

*MMUST observes ZERO tolerance to examination cheating*

*This Paper Consists of 2 Printed Pages. Please Turn Over.*

1. Define the following terms as used in plant physiology.(20 marks)

- a) Monosaccharides
- b) Photosynthesis
- c) Glycosidic bond
- d) Lipids
- e) Amphipathic salt
- f) ATP
- g) Chloroplast
- h) Photoautotrophs
- i) Amino acid
- j) Homopolysaccharide

2. a). State and explain how carbohydrates are categorized. (6 marks)

b). With examples, state four principal biomolecules studied in plant biochemistry. (4 marks)

c). Briefly discuss the levels of structural organization in protein biochemistry. (8 marks)

d). Name two types of aromatic amino acids.(2 marks)

3. a). Discuss photosynthesis in relation to physio-chemical processes in crop husbandry. (10 marks)

b). State characteristics of saturated and unsaturated fatty acids beneficial to man. (10 marks)

4. Discuss steps and factors that affect the rate of respiration in crops. 20 marks)

5. a). Define plant metabolism. (2 marks)

b). Using a sketch diagram, draw the structures of the listed monosaccharide derivatives. (8 marks)

- i). D-2-Deoxyribose
- ii). D-Ribose
- iii). D-Glucosamine
- iv). Sorbitol

c). Explain how you would differentiate *cis*- and *trans*- fatty acids(10 marks)

