



University of choice

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

MAIN CAMPUS

**UNIVERSITY EXAMINATIONS
2020/2021 ACADEMIC YEAR**

**FIRST YEAR SECOND SEMESTER MAIN EXAM FOR THE DEGREE OF
MASTER OF SCIENCE IN PLANT BREEDING (MSc. PL. BREEDING)**

COURSE CODE: APB 821

**COURSE TITLE: CYTOGENETICS AND CHROMOSOME MANIPULATIONS IN
PLANTS**

DATE: 20TH APRIL, 2022

TIME: 12-3PM

INSTRUCTION TO CANDIDATES

Answer ALL QUESTIONS IN SECTION ONE and any other TWO in section B

Time: 3hrs

MMUST observes ZERO tolerance to examination cheating

SECTION A: (40 marks). Answer all questions

1. Define the following terms: Hybridization, Anaeploidy Mutation, Genetics and Breeding

(10 marks)

2. Explain activities that take place in the process of mitosis (5 stages) **(5 marks)**

3. Describe the major difference between Mitosis and Meiosis, what is the contribution of meiosis in

Evolution **(5 marks)**

4. Define embryogenesis. How does it differ in process from seed production **(10 marks)**

5. What is self in-compatibility in a plant and how can it be overcome naturally? **(10 marks)**

SECTION B: ANSWER TWO QUESTIONS (60 marks)

6. List at least six techniques used in crop production by manipulation of cell or parts of cell operations **(20 marks)**

7. Discuss the structure and nature of chromosome and genes **(20 marks)**

8. Name and describe some chromosome abnormalities in plant cell that have been used to the advantage of plant wellbeing. **(20 marks)**

9. Discuss:

a) Biosafety policy **(10 marks)**

b) Preservation of biomaterials **(10 marks)**