



(University of Choice)

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)

MAIN CAMPUS

UNIVERSITY EXAMINATIONS

2021/2022 ACADEMIC YEAR (REGULAR)

**FIRST YEAR SECOND SEMESTER MAIN EXAMS FOR DIPLOMA IN GENERAL
AGRICULTURE AND HORTICULTURE**

COURSE CODE: DAG 054

COURSE TITLE: GENETICS

DATE: 26TH APRIL, 2022

TIME: 12-2 PM

INSTRUCTIONS TO STUDENTS

Answer all questions in section A

Answer any TWO questions in section B

Total marks=70

MMUST observes ZERO tolerance to examination cheating

SECTION A: ANSWER ALL QUESTIONS (30 marks)

QUESTION ONE

Define the following terms as used in genetics

- i. Genetics(1 mark)
- ii. Allele(1 mark)
- iii. Genome(1 mark)
- iv. Linked genes(1 mark)
- v. Polyploidy(1 mark)

QUESTION TWO

1. Explain the reasons Mendel selected a pea plant for his genetic experiments(3marks)
2. Differentiate between a backcross and a testcross (2marks)
3. Define Mendel's law of segregation and law of independent assortment(4marks)
4. Explain why sex linked recessive conditions more likely in males than in females(2marks)

QUESTION THREE

- a. A black mouse with a straight tail reproduces with a yellow mouse with a bent tail. The phenotypic ratio among the offspring is 1:1:1:1. What is the genotype of the first mouse? Show your working (4marks)
- b. Differentiate between inbreeding and outbreeding (2marks)
- c. Describe any four types of chromosomal mutations(4marks)
- d. Explain the role of environment in quantitative inheritance (2marks)
- e. Give any two advantages of genetic engineering (2marks)

SECTION B: ANSWER ANY TWO QUESTIONS (40marks)

QUESTION FOUR

- (a) Explain Mendel's experiments. Use illustrations (15marks)
- (b) Describe what Mendel concluded from his experiments (5marks)

QUESTION FIVE

- (a) Summarize the similarities between events occurring during meiosis and fertilization and Mendel's hypothesis (10marks)
- (b) A woman with a normal color vision, but is a carrier for color blindness marries a man with normal color vision. Determine the probability of transmitting the genes to their offspring (10marks)

QUESTION SIX

- (a) Discuss any applications of genetics (10marks)
- (b) Describe genetic code and how does it work (10marks)

