University of choice

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)
SCHOOL OF AGRICULTURE, VETERINARY SCIENCES AND TECHNOLOGY (SAVET)

MAIN CAMPUS

UNIVERSITY EXAMINATIONS
2023/2024 ACADEMIC YEAR
MAIN EXAM
OF
DIPLOMA IN GENERAL AGRICULTURE AND HORTICULTURE

COURSE CODE: DAG/DAH 054

COURSE TITLE: GENETICS

DATE: 20.12.23 **TIME: 3-5PM**

INSTRUCTIONS TO CANDIDATES

This paper is divided into two sections, **A and B. Answer ALL Questions in SECTION A and any Two in SECTION B**

MMUST observes ZERO tolerance to examination cheating

SECTINON A (30 marks)

1. Define the following terms as used in genetics (5marks)
   a. Genetics
   b. Heterozygous
   c. Genotype
   d. Variation
   e. Linked genes
2. Why did Mendel select a pea plant for his genetical experiments (3marks)
3. State Mendel's first law on monohybrid crosses (2marks)
4. List any four advantages of genetic engineering (4marks)
5. Why are sex linked recessive conditions more likely in males than in females (2marks)
6. Differentiate between epistasis and gene linkage (3marks)
7. A monohybrid cross between a female long winged drosophila and a male vestigial winged drosophila (both male and female drosophila carry homozygous traits).
   a) Find the F1 generation (3marks)
8. State examples of variation in plants (2marks)
9. Below is a nucleotide strand A A G T C
   b) Identify the type of nucleic strand (1mark)
   c) Give reason for your answer above (1marks)

10.a) Define the term genetic engineering (2mark

b) Name two sex linked traits in humans (2marks)

SECTION B: ANSWER ANY TWO QUESTIONS (40marks)

11.a) Haemophilia is caused by a recessive gene located in the X-chromosome. A man with normal blood clotting marries a woman who also has normal blood clotting in the event of a cut. On getting offsprings, one of their sons turned out to be a haemophilic. Using letter H for normal blood clotting, work out the parental phenotypes (10marks).

b) Describe the advantages of polyploidy in evolution of plant crops and animals (10marks)

12.a) Using illustrations, explain Mendel's experiments (16marks)

b) What did Mendel conclude from his experiments (4marks)

13.a) discuss different types of mutations that alter DNA sequences thus protein function (10marks)

b) State and explain any five types of breeding systems (10marks)