



**MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY
BACHELOR OF SCIENCE IN BIOTECHNOLOGY (BSc. Bio.Tech)
EXAMINATIONS**

2019/2020 ACADEMIC YEAR

COURSE CODE: AGR 202

COURSE TITLE: BIOTECHNOLOGY AND CROP IMPROVEMENT

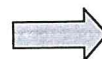
DATE: 27.7.22

TIME: 11-1

Instruction to candidates

- 1. Answer question ALL QUESTIONS IN SECTION A and ANY TWO IN SECTION B.**

This paper consists 2 pages Please turnover



SECTION A:

Answer ALL from section A (30 Marks).

- Q1 Differentiate DNA from Genes (2 marks). Use illustrations to show the structures of DNA and RNA(8 marks).
- Q2 Define the following terms used in crop improvement (i) Somatic Hybridization (ii)Embryo culture (iii) Soma clonalvariation (6marks).
- Q3 Define the following terms (i) Plant cell culture (ii issue culture (iii) organ culture (6marks).
- Q4 Discuss recent advances in Biotechnology (4 marks).
- Q5 Describe the different functions of mRNA and tRNA (4 marks).

SECTION B Answer TWO questions (20 marks per question)

- Q6 Describe methodologies used in GMO development. (10 marks). Discuss Controversies surrounding se of GMOs. (5marks) What safety measures in terms of policy has Kenya put in place over GMOs (5marks).
- Q7 Explain **how** modern biotechnology has offered opportunities to produce more nutritious and better tasting foods, higher crop yields and plants that are naturally protected from disease and insects.
- Q8 Biotechnology has improved on farmers lives by reducing the need for pest control, impacts and reduced resources spent on the land.
- Q9 Explain with real life examples how biotechnology can compress the time frame required to translate fundamental discoveries into applications.