



**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY
SCHOOL OF AGRICULTURAL AND FOOD SCIENCES**

**FOURTH YEAR SECOND SEMESTER UNIVERSITY EXAMINATION FOR THE
DEGREE OF BACHELOR OF SCIENCE IN FOOD SECURITY**

**2020/2021 ACADEMIC YEAR
SPECIAL/RESIT EXAMS**

COURSE CODE: AFB 3426

COURSE TITLE: Biotechnology in Agriculture

EXAM VENUE:

STREAM: BSc. Food Security

DATE:

EXAM SESSION:

TIME: 2 HOURS

Instructions:

- 1. Answer ALL questions in section A and ANY other 2 Questions in section B.**
- 2. Candidates are advised not to write on question paper.**
- 3. Candidates must hand in their answer booklets to the invigilator while in the examination room.**

SECTION A [30 MARKS]

Answer ALL questions from this Section

1. Define or Explain the following terminologies
 - (a) Directed mutagenesis [1 MARK]
 - (b) Enzyme-linked immunosorbent assay (ELISA)[1 MARK]
 - (c) Bioremediation [1 MARK]
 - (d) Fermentation (in biochemistry) [1 MARK]
 - (e) Genetic immunization[1MARK]
 - (f) Genomics [1MARK]
 - (g) Cell [1 MARK]
 - (h) Transgenic plant [1 MARK]
 - (i) Transcriptome [1 MARK]
 - (j) Plant tissue culture [1 MARK]

2. Describe TWO uses of reporter genes in transformed plant cells[2 MARKS]

3. Distinguish between sexual and asexual reproduction [2 MARKS]

4. Describe FIVE benefits of biotechnology in agriculture:[5 MARKS]

5. Describe FIVE differences between genetic engineering and conventional breeding [5 MARKS]

6. List SIX traits that can be improved through genetic engineering [6 MARKS]

SECTION B (40 MARKS)

Answer ANY TWO questions in this section

7. Describe the historical event that contributed to the field of biotechnology and agriculture [20 MARKS]

8a. Describe FIVE uses of transgenic livestock
MARKS]

[15

8b. EXPLAIN why genetically modified livestock needs to be regulated

[5 MARKS]

9a. Describe FIVE characteristics of a model organism**[5 MARKS]**

9b. Describe EIGHT advantages of micropropagation over traditional plant propagation techniques
[15 MARKS]