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. Defineor 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 **[15 MARKS]**

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]**