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

SPECIAL EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN HORTICULTURE AND ANIMAL SCIENCE
2019/2020 ACADEMIC YEAR

RESIT EXAMINATION

COURSE CODE: AAB 3424 **COURSE TITLE:** GMOs, Biosafety and Bioethics

EXAM VENUE: **STREAMS**: BSc. Horticulture and Animal Science
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.**

Answer all questions in Section A and Two questions in Section B

SECTION A [30MARKS]

1. (a) Define the following terminologies
   - I. Recombinant DNA technology [1 mark]
   - II. Transgenic Organisms [1 mark]
   - III. Intellectual property right. [1 mark]
2. Explain why GMOs are created [4 mks]
3. Using examples differentiate between the following
   (a) Biosafety and Bioethics [2 marks]
   (b) Trademark and copyright [2 marks]
4. (a) What is a biohazard? [2 marks]
   (c) State and explain the four different levels of biocontainment laboratories [4marks]

5. Genes that seem to be of much interest to public and private sectors in agriculture are those that confer resistance to biotic and abiotic stresses as well as quality traits.
   a. Using BT maize as an example, briefly discuss the above statement. [4 mark]
   b. Enumerate **two** examples where biotechnology is used to improve agricultural produce quality. [4 marks]

6. State four Good laboratory practices that should be observed when working in a biotechnology laboratory. [4 marks]

SECTION B [40 MARKS]

7. Formulate guidelines which should be adopted by the Department of Biotechnology, Govt. of Kenya to ensure sound science and ethical principle. [20 marks]
8. Describe in details how genetically modified organisms are developed and their significance in the global food systems [20marks]
9. Discuss the relevance of intellectual property rights to modern biotechnology [20 marks
10. Explain the challenges facing modern biotechnology research and application in Kenya [20marks]