



**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 HORTICULTURE AND  
BACHELOR OF SCIENCE IN ANIMAL SCIENCE**

**2019/2020 ACADEMIC YEAR**

**REGULAR**

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**COURSE CODE: AFB 3412**

**COURSE TITLE: GMOs, Biosafety and Bioethics**

**EXAM VENUE:**

**STREAM: BSc. Horticulture and BSc. Animal Science**

**DATE:**

**EXAM SESSION:**

**TIME: 2 HOURS**

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**Instructions:**

- 1. Answer ALL the questions in section A and any TWO 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.**
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**SECTION A [30 MARKS]**

**Answer ALL questions from this Section.**

- 1 a. Define Recombinant DNA Technology ( 2 marks)**
  - b. Describe general principles of GMO technology (3 marks)**

- c. State four reasons of creating GMOs (2 marks)
- d. Highlight Objective of the Cartagena Protocol on Biosafety (3 marks)
- 2. a. Explain the factors that modify Biosafety and Biosecurity risks (4 marks)
- b. Define risk assessment and what it involves (3 marks)
- c. What are the potential and perceived Biosafety concerns associated with GMOs? (3 marks)
- 3. a. Explain what you understand by biodiversity prospecting and to how and whom it is useful. (4 marks)
- b. What is the role of patents in biotechnological development (4 marks)
- c. Differentiate between genetic testing and genetic screening. (2 marks)

**SECTION B [40 MARKS]**

**Answer any TWO QUESTIONS from this Section.**

- 4. There is on-going discourse on use of genetically modified organisms in the global food systems. Highlight key aspects of this discussion (20 Marks)
- 5. You have just been offered a position working with Bacillus anthracis. This position has great pay and great benefits. Before you decide to accept this position, you should perform a risk assessment. In the space that follows, walk me through your risk assessment, and decide whether you will accept this position or not. (20 Marks)
- 5. Formulate guidelines which could be adopted by the Department of Biotechnology, Govt. of Kenya to ensure sound science and ethical principles. (20 marks)