



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

**SECOND YEAR SECOND SEMESTER UNIVERSITY EXAMINATION FOR THE
DEGREE OF BACHELOR OF SCIENCE IN AGRIBUSINESS MANAGEMENT AND
BACHELOR OF SCIENCE IN FOOD SECURITY**

**2021/2022 ACADEMIC YEAR
REGULAR**

COURSE CODE: AAE 3212/AAB 2207

COURSE TITLE: Biodiversity and Agricultural Biotechnology

**EXAM VENUE: STREAM: BSc. Agribusiness Management/
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. Give short answers to the following: **[10 MARKS]**
- (a) Why is genetic diversity important?
 - (b) How can genetic diversity be lost?
 - (c) Explain your understanding of conservation genetics.
 - (d) How does a plant breeder contribute to genetic bottleneck?
 - (e) Why wild relatives of crop species are considered important in crop improvement?
2. Outline TEN significant contributions of biodiversity to sustainable food systems **[10 MARKS]**
3. Describe the following components of agricultural diversity. Give example(s) for each component **[10 MARKS]**
- (a) Intraspecific diversity:
 - (b) Interspecific diversity:
 - (c) Planned diversity:
 - (d) Associated diversity:

SECTION B (40 MARKS)

Answer ANY TWO questions in this section

4a. Giving examples, explain how DNA technologies and in vitro techniques are being effectively utilized for conservation of plant species
[10 MARKS]

4b. Explain why genetic pollution (i.e., uncontrolled hybridization or introgression) is a threat to extinction of endemic species
[10 MARKS]

5a. Molecular markers are effective tools for evaluation of germplasm. Explain
[10 MARKS]

5b. As a decision-maker, outline TEN steps to ensure prevention of loss of biodiversity in Kenya
[10 MARKS]

6a. In what SIX ways can genetically modified crops benefit biodiversity. Support your answers with examples
[10 MARKS]

6b. Explain why the identification of genomic regions controlling traits essential for adaptation of crop species to specific environments is important in conservation of biodiversity
[10 MARKS]