



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

**SECOND YEAR SECOND SEMESTER EXAMINATION FOR THE DEGREE OF
BACHELOR OF SCIENCE IN ANIMAL SCIENCE AND BACHELOR OF SCIENCE
IN FOOD SECURITY**

2024/2025 ACADEMIC YEAR

REGULAR

COURSE CODE: AAB1204

COURSE TITLE: Utilization and Conservation of Animal Genetic Resources

EXAM VENUE:

STREAM: BSc. (Animal Science) and
BSc (Food Security)

DATE:

EXAM SESSION:

TIME: 2 Hours

Instructions:

1. Answer **ALL** questions in **Section A** and **TWO** questions in **Section B**.
2. Candidates are advised **NOT** to write anything on this 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.

Question 1

Question 1 consists of five multiple-choice questions. Write your correct answer to each question in the answer booklet.

- 1.1. Which of the following best defines biological diversity? (2 Marks)
- a) The total number of animal species in a region.
 - b) The variation in species, ecosystems, and genes in a given area.
 - c) The diversity in plant species.
 - d) The number of different ecosystems in a country.
- 1.2. What is the primary role of animal genetic resources (AnGR)? (2 Marks)
- a) To increase biodiversity in forests.
 - b) To enhance livestock productivity and contribute to food security.
 - c) To conserve plant species.
 - d) To limit genetic diversity in wild animals.
- 1.3. Which of the following is a key factor contributing to genetic erosion in AnGR? (2 Marks)
- a) Inbreeding within local livestock breeds.
 - b) Overpopulation of livestock species.
 - c) Use of only genetically modified crops.
 - d) Lack of biodiversity in ecosystems.
- 1.4. Which international organization coordinates global management of AnGR? (2 Marks)
- a) World Health Organization (WHO).
 - b) United Nations Environmental Programme (UNEP).
 - c) Food and Agriculture Organization (FAO).
 - d) International Union for Conservation of Nature (IUCN).
- 1.5. Which of the following is an example of a community-based conservation for AnGR? (2 Marks)
- a) National breeding programs.
 - b) In-situ conservation through local herders' involvement.
 - c) Genetic modification of breeds.
 - d) Government mandates for species protection.

Question 2

Explain the role of indigenous breeds in maintaining genetic diversity in livestock. (4 Marks)

Question 3

Distinguish between in-situ and ex-situ conservation methods for animal genetic resources. Give examples of each and explain the advantages and disadvantages of both methods.

(4 Marks)

Question 4

What is the role of cryopreservation in the conservation of Animal Genetic Resources (AnGR)? (3 Marks)

Question 5

Compare and contrast the role of AnGR in enhancing food security and poverty alleviation in rural communities. (3 Marks)

Question 6

Explain the importance of maintaining accurate genetic databases for AnGR inventory. (3 Marks)

Question 7

Describe the threats to AnGR diversity caused by industrialization, monoculture, and climate change. (3 Marks)

SECTION B [40 MARKS]

Answer ANY TWO Questions from this Section.

Question 8

Explain following:

- a) Genetic Erosion and Its Consequences. (4Marks)
- b) Indigenous vs. Exotic Animal Breeds. (4 Marks)
- c) Role of AnGR in Climate Change Adaptation. (4 Marks)
- d) In Situ Conservation of AnGR. (4 Marks)
- e) Transboundary Conservation of Animal Genetic Resources. (4 Marks)

Question 9

Discuss the main threats to the diversity of Animal Genetic Resources (AnGR). (20 Marks)

Question 10

Discuss the importance of value enhancement and sustainable use of Animal Genetic Resources. (20 Marks)

Question 11

Discuss the different conservation methods for Animal Genetic Resources. (20 Marks)