



FACULTY OF NATURAL RESOURCES MANAGEMENT AND AGRICULTURE
DEPARTMENT OF ANIMAL PRODUCTION AND HEALTH

BACHELOR OF SCIENCE HONOURS DEGREE IN ANIMAL SCIENCE

Animal Breeding (LAS 2204)

SEMESTER 2 EXAMINATION

June 2024

Time Allowed: 3 hours
Total Marks: 100
Special Requirements: None
Examiner's Name: K. Mafunga

Instructions to Candidates:

1. The paper consists of six questions, answer **ALL** questions in **Section A** and **ANY TWO** in **Section B**.
2. Marks for each question are shown in brackets. Where a question has subdivisions, the marks for each subdivision are given.
3. Illustrate your answer, where applicable, with large clearly labelled diagrams.

MARK ALLOCATION

QUESTION	MARKS
SECTION A	60
SECTION B	40
TOTAL ATTAINABLE MARKS	100

This paper consists of three printed pages including this one.

SECTION A: ANSWER ALL QUESTIONS IN THIS SECTION

Question 1

- i. Outline five non-genetic factors that influence animal breeding outcomes. **[5 marks]**
- ii. Describe how the listed non-genetic factors interact with genetic factors in determining phenotypic expression. **[10 marks]**
- iii. How can breeders account for these non-genetic factors in breeding program design and management? **[10 marks]**

Question 2

- i. Explain any five factors influencing the accuracy of Estimated Breeding Values (EBVs). **[10 marks]**
- ii. Suggest five strategies that breeders can employ to maximise EBV accuracy. **[10 marks]**

Question 3

- i. Define selection response in breeding programs. **[1 mark]**
- ii. Discuss the factors that influence the magnitude and direction of response to selection. **[10 marks]**
- iii. Giving examples, explain why some traits exhibit high or low selection responses. **[4 marks]**

SECTION B. ANSWER ANY TWO QUESTIONS IN THIS SECTION

Question 4

- i. Discuss the key motivations behind adopting community-based breeding programs over traditional breeding approaches. **[10 marks]**
- ii. How do these motivations (in 4i) address specific challenges or limitations in conventional breeding methods? **[10 marks]**

Question 5

- i. Compare and contrast closed-nucleus and open-nucleus breeding programs. **[10 marks]**
- ii. Describe the structure of a typical commercial poultry breeding program. **[10 marks]**

Question 6

- i. Highlight the contribution of reproductive biotechnologies to genetic improvement in animal breeding programs. **[10 marks]**
- ii. Discuss the advantages and limitations of each of these techniques in enhancing breeding efficiency and genetic progress. **[10 marks]**

END OF QUESTION PAPER

Copyright: Gwanda State University, 2024