

NATIONAL UNIVERSITY OF LESOTHO
FACULTY OF AGRICULTURE
DEPARTMENT OF ANIMAL SCIENCE
B.SC. AGRICULTURE (ANIMAL SCIENCE)
ANS3511: ANIMAL BREEDING
SECOND SEMESTER EXAMINATION

JUNE, 2023

MARKS: 100

TIME: 3:00 HOURS

INSTRUCTIONS:

- 1. ANSWER ALL QUESTIONS**
 - 2. NUMBER EACH QUESTION PROPERLY**
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Question 1

a) Define the following terms as used in animal breeding:

- i. Introns. [2]
- ii. Phenotypic Plasticity. [2]
- iii. Codon. [2]
- iv. Functional trait. [2]
- v. A recombinant DNA technology. [2]

b) Differentiate between the following:

- i. Dominance versus Epistasis. [4]
- ii. Complete dominance versus incomplete dominance. [2]
- iii. Additive genetic effects versus non-additive genetic effects. [2]
- iv. Euchromatin versus heterochromatin. [2]

Question 2

Write briefly about the following animal breeding concepts:

- i. Selection by nature. [4]
- ii. DNA-based markers. [6]
- iii. Trait selection. [8]
- iv. Gene theory. [8]

Question 3

a) Briefly discuss the factors that complicates the choice of a breeding objective. [7]

b) Briefly explain the ability of molecular genetic techniques when improving the genetic makeup of livestock. [7]

Question 4

a) With the aid of examples, briefly explain to the farmer why crossing is not possible between some species but possible in others. [6]

b) Discuss phenotypic/morphological traits you would use to decide on the adaptability genotypes of the cattle. [8]

Question 5

Describe the gains that would be made in determining genetic and environmental variance in animal breeding. [10]

Question 6

a) Briefly explain the functions and requirements of a breeding programme. [6]

b) With examples where possible, differentiate between phenotypic and genotypic approaches of describing livestock populations. [10]