



# MACHAKOS UNIVERSITY

University Examinations for 2019/2020 Academic Year

SCHOOL OF AGRICULTURAL SCIENCES

DEPARTMENT OF AGRIBUSINESS MANAGEMENT AND TRADE

SECOND YEAR SPECIAL/ SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF SCIENCE IN AGRICULTURAL EDUCATION AND EXTENSION

BACHELOR OF SCIENCE IN AGRIBUSINESS MANAGEMENT

ANS 241: PRINCIPLES OF ANIMAL BREEDING

DATE: 18/01/2021

TIME: 8.30-10.30 AM

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## INSTRUCTIONS:

Answer question one and any other two questions

### QUESTION ONE (30 MARKS)

- a) Distinguish between
- i. Qualitative and quantitative traits (2 marks)
  - ii. Mitosis and meiosis (2 marks)
- b) Explain the following terminologies
- i. Heterosis (2 marks)
  - ii. Incomplete dominance (2 marks)
  - iii. Genetic death (2 marks)
- c) Explain **TWO** causes of variation in livestock (4 marks)
- d) Explain **TWO** negative attributes of inbreeding in livestock (4 marks)
- e) Explain **FOUR** methods of estimating the breeding value of an animal (4 marks)
- f) Explain the difference between gene frequency and genotype frequency (4 marks)
- g) Explain **FOUR** advantages of artificial insemination (4 marks)

## **SECTION B.**

**Answer any TWO questions**

### **QUESTION TWO (20 MARKS)**

- a) In a population of 800 cattle the horned animals were 200.
- i. Calculate the frequency of the polled gene trait in the population (2 marks)
  - ii. If the individuals homozygous for the polled genes are 200. Calculate the genotypic frequency for the heterozygous individuals (3 marks)
- b) Explain **FIVE** factors that may change gene frequencies in a population (15 marks)

### **QUESTION THREE (20 MARKS)**

- a) Explain **Five** constraints facing livestock breeding programs in Kenya (10 marks)
- b) Explain **FIVE** reasons for cross breeding in livestock breeding (10 marks)

### **QUESTION FOUR (20 MARKS)**

- a) Using one examples in each case, explain Mendel's principles of inheritance in livestock breeding under the following.
- i. The principle of Dominance (5 marks)
  - ii. The principle of Independent Assortment (5 marks)
- b) Partition the genotype and explain the respective components (10 marks)

### **QUESTION FIVE (20 MARKS)**

- a) Explain **TWO** methods used in multiple trait selection (10 marks)
- b) Explain **FIVE** reasons for cross breeding (10 marks)