COLLEGE OF HEALTH, AGRICULTURE & NATURAL SCIENCES

NAAS 406: ANIMAL BREEDING

END OF FIRST SEMESTER FINAL EXAMINATIONS

NOVEMBER/DECEMBER 2022

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DURATION: 3 HOURS

Instruction

Answer one question. Each question carries 100 marks

Question 1

a. Define the following
   i. Gene [2]
   ii. Allele [2]
   iii. Locus [2]
   iv. Dominant gene [2]
   v. Recessive gene [2]
   vi. Homozygous [2]
   vii. Heterozygous [2]
b. What are the effects of inbreeding in livestock [11]
c. Discuss the traits of economic importance for a livestock species of your choice [15]
d. Compare and contrast the following
   i. Performance testing and Progeny testing [20]
   ii. Pedigree testing and Sib testing [20]
   a. Tandem selection and Independent culling levels [20]

Question 2

a. Distinguish the following
   i. Gene and allele [4]
   ii. Dominant gene and recessive gene [4]
   iii. Homozygous and heterozygous [4]
   iv. Pure breeding and crossbreeding [8]
   v. Single cross and backcross [20]
b. In shorthorn cattle, three coat colours are red, roan and white. In a sample of 1000 Shorthorns, assume the number of animals with each coat colour is

Colour	**Genotype**	**Number**
Red	RR	nRR = 360
Roan	Rr	nRr = 480
White	rr	nrr = 160
Total		**N =1000**

Calculate

i. The genotype frequencies [10]
ii. The gene frequencies [10]

c. Describe the situation in which the following selection schemes are used in livestock breeding

i. Performance testing [10]
ii. Progeny testing [10]
iii. Pedigree testing [10]
iv. Sib testing [10]

Question 3

a. Define the following

i. Genotype [2]
ii. Phenotype [2]
iii. Heredity [2]
iv. Trait [2]
v. Genetics [2]

b. Discuss the various single trait selection schemes which are used in livestock breeding [20]

c. What are the merits and demerits of the following types of breeding

i. Inbreeding [15]
ii. Crossbreeding [15]

d. Write short notes on the following cross breeding systems

i. Single cross [10]
ii. Backcross [10
iii. Three-breed terminal cross breeding systems [10]
iv. Grading-up [10]

END OF EXAMINATION PAPER