"Investing in Africa's Future"

COLLEGE OF HEALTH, AGRICULTURE & NATURAL SCIENCES

NAAS306 ANIMAL BREEDING

END OF SEMESTER EXAMINATIONS

NOVEMBER 2019

LECTURER: DR. WASHAYA

DURATION: 3 HOURS

INSTRUCTIONS

Answer any five questions.

Applied Animal Breeding:

1. Compare and contrast the following:
   - i. Qualitative and quantitative traits. [8]
   - ii. Gene and allele. [2]
   - iii. Animal breeding and genetics. [2]
   - iv. Penetrance and variable expressivity. [4]
   - v. Co-dominance and partial dominance. [4]

2. a) Illustrate the importance of Robertsonian translocation in animal breeding. [4]

   b) Discuss the consequences of domestication with reference to animal breeding. [5]

   c) Indicate the genetic basis of pale soft exudative (PSE) meat. [5]
   d) Giving examples describe sex-influenced and sex-limited traits. [6]

3. a) Describe the concept of graded dominance as exhibited by rabbits. [8]

   b) Discuss how selection, mmutation and migration changes gene and genotypic frequencies [12]

4. a) Angus cattle which are black (BB) and polled (PP) were crossed to Hereford cattle that are red (bb) and horned (pp) to produce black and polled heterozygotes (BbPp) as the F1. Determine the phenotypic ratios if the heterozygotes were crossed in F2 generation. [10]

   b) Using data in question (a) above, show the changes to the phenotypic ratios as a result of dominant and recessive epistasis. [10]

5. a) Discuss sex-linked traits, illustrating their pattern of inheritance [10]

   b) Polygenic traits are either linked (linked genes) or correlated, using practical examples, explain these two concepts. [10]

6. Shorthorn cattle exhibit three coat colour types (red, roan and white). The genotypes of 1000 Shorthorns were determined and results are shown below:

Colour	Genotype	Number		
Red	RR	n_{RR}	=	360
Roan	Rr	n_{Rr}	=	480
White	rr	n_{rr}	=	160
		n		**= 1000**

a) Using the Hardy-Weinberg Law determine the gene and genotypic frequencies. [10]

b) Illustrate maternal effects in animal breeding [10]

7. a) Discuss the importance of heritability and repeatability as genetic parameters.
   [10]

   b) State and explain the effects of inbreeding. [10]

END OF QUESTION PAPER!!!