



UNIVERSITY OF SWAZILAND

1ST SEM. 2016/2017

FINAL EXAMINATION PAPER

PROGRAMMES: **BSc ANIMAL SCIENCE**
 BSc ANIMAL SCIENCE (DAIRY OPTION)

COURSE CODE: **AS 301**

TITLE OF PAPER: **ANIMAL BREEDING**

TIME ALLOWED: **TWO (2) HOURS**

INSTRUCTIONS: **ANSWER QUESTION ONE (1) AND ANY**
 OTHER THREE (3) QUESTIONS.

DO NOT OPEN THIS PAPER UNTIL PERMISSION HAS BEEN
GRANTED BY THE CHIEF INVIGILATOR

QUESTION 1

- (A) The generation interval is defined as
1. X
 2. L
 3. The average age of the parent when a replacement progeny is born.
 4. The average age of the progeny when the parent leaves the breeding population.
 5. The interval between parturitions.
- (2.5 Marks)
- (B) The breeding goal
1. Includes all traits of economic importance.
 2. Is also known as the breeding net.
 3. Includes all possible traits.
 4. Is at the discretion of the breeder.
 5. Is also known as the aggregate genotype.
- (2.5 Marks)
- (C) A multiple trait model should be used if
1. Genetic and environmental covariance matrices are unknown.
 2. Traits are negatively correlated.
 3. Heritabilities of all traits are low.
 4. Culling might cause bias in one or more traits.
 5. It has not been tried previously.
- (2.5 Marks)
- (D) Product of meiosis does not include one of these
1. Four daughter cell
 2. Daughter cells with haploid number of chromosomes
 3. Two daughter cells with same chromosome numbers as the parent cell
 4. Synapsis.
 5. Crossing over.
- (2.5 Marks)
- (E) Selection is defined as
1. Natural, random culling of animals.
 2. Non-random pairing of mating individuals.
 3. An act of God.
 4. Choosing sires for use on a group of females.
 5. Any action that changes the probability of an individual's chances to reproduce.
- (2.5 Marks)

(F) Selection intensity is

1. Directly related to the amount of genetic change.
2. Related to the heritability of the trait.
3. Zero when 50% of the animals are selected.
4. Related to the level of anxiety in animals.
5. The mean of individuals above a truncation point on a normal distribution with mean of zero and standard deviation of one.

(2.5 Marks)

(G) Selection index is

1. A practical representation of the Aggregate Genotype.
2. More useful than single trait selection.
3. Only used in dairy cattle.
4. Related to the Cost of Living Index.
5. A linear index not really useful for selection.

(2.5 Marks)

(H) Single Nucleotide Polymorphisms (SNPs) are popular today because

1. There are millions of them spread across the genome.
2. They are co-dominant.
3. They are not inbred.
4. They are highly polymorphic.
5. They are easy to genotype.

(2.5 Marks)

(I) A haplotype is

1. A model of a genotype.
2. A copy of a genotype.
3. A font size in R.
4. The set of alleles (one per locus) that happen to be on a particular chromosome and usually inherited as a single unit most of the time, except for recombination.
5. A combination of haploid and genotype, the 'genotype' of a single chromosome.

(2.5 Marks)

(J) Genetic variances can decrease over time due to

1. Selection.
2. Genetic drift.
3. Heterosis.
4. Linkage disequilibrium.
5. Inbreeding.

(2.5 Marks)

A+B+C+D+E+F+G+H+I+J
 (2.5+2.5+2.5+2.5+2.5+2.5+2.5+2.5+2.5+2.5=25 Marks)

QUESTION 2

Using a figure diagram alone, describe the different steps of a breeding programme.
(25 Marks)

QUESTION 3

What are the different factors that can affect the decisions of a breeding goal?
Discuss any two comprehensively.
(25 Marks)

QUESTION 4

Discuss on the role of DNA in Animal Breeding.
(25 Marks)

QUESTION 5

Reasons for keeping animals determine the breeding goal: Discuss

(25 Marks)