FACULTY	HEALTH SCIENCES & VETERINARY MEDICINE		
DEPARTMENT	PRECLINICAL STUDIES		
SUBJECT	VETERINARY GENETICS		
SUBJECT CODE	V3621EG		
DATE	JUNE 2024		
DURATION	2 HOURS	Marks	100

FIRST OPPORTUNITY EXAMINATION

Examiner: Dr. E. Lutaaya
Internal Moderator: Prof. S. Chitanga
External Moderator: Prof. D. Pfukenyi

This question paper consists of 3 pages Including this front page.

Instructions

This question paper consists of five (5) questions.
Attempt all of them. Calculators may be used.

UNIVERSITY OF NAMIBIA EXAMINATIONS

QUESTION 1 **[20]**

Using examples, explain the following terminologies:

(a) Complete dominance (5)

(b) Epistasis (5)

(c) Pleiotropy (5)

(d) Genetic heterogeneity (5)

QUESTION 2 **[20]**

Pigment in the mouse is produced only when the C allele is present. Individuals of the *cc* genotype have no colour. If colour is present, it may be determined by the A and *a* alleles. AA or *aa* results in agouti colour, whereas aa results in black coats.

(a) What are the F_1 genotypic and phenotypic ratios obtained from a cross between AACC and *aacc* mice? (4)

(b) What are the F_2 genotypic and phenotypic ratios obtained from a cross between AACC and *aacc* mice? (6)

(c) In the three crosses shown below between agouti females whose genotypes were unknown and males of the aacc genotype, what are the genotypes of the female parents for each of the following phenotypic ratios?

(i) 8 agouti, 8 colourless (3)

(ii) 9 agouti, 10 black (3)

(iii) 4 agouti, 5 black, 10 colourless (4)

QUESTION 3 **[20]**

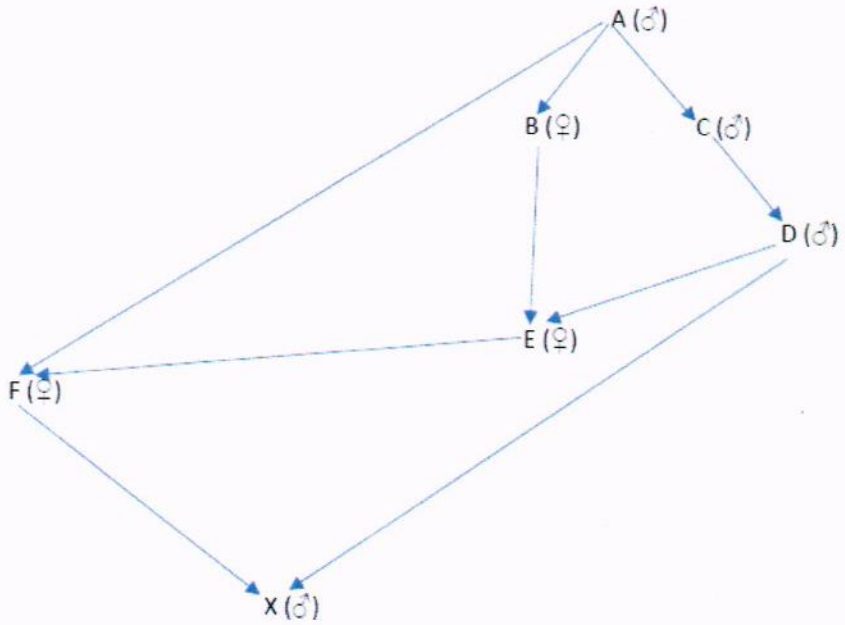
a) Distinguish between innate and adaptive (acquired) immunity. (10)

b) List the components of the innate and adaptive immune systems. (10)

QUESTION 4 **[20]**

(a) Explain the genotypic and phenotypic effects of inbreeding. (10)

(b) For the pedigree below:



(i) Calculate the inbreeding coefficient of X. (8)

(ii) Interpret the meaning of the computed inbreeding coefficient in (i). (2)

QUESTION 5 **[20]**

a) Using an example, explain what you understand by inborn errors of metabolism.

(3)

b) Explain two (2) different ways by which α-mannosidosis can arise in cattle.

(4)

c) Explain three (3) different ways by which host resistance to disease can be manifested. (6)

d) Explain the weaknesses in the methods used in control of gastro-intestinal parasites like *Haemonchus contortus*. (4)

e) Explain the new approaches that are under investigation for control of gastro intestinal parasites. (3)