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UNIVERSITY OF NAMIBIA

FACULTY	HEALTH SCIENCES & VETERINARY MEDICINE		
DEPARTMENT	PRECLINICAL STUDIES		
SUBJECT	VETERINARY GENETICS		
SUBJECT CODE	V3621EG		
DATE	JUNE 2025		
DURATION	2 HOURS	Marks	100

SECOND OPPORTUNITY EXAMINATION

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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.

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QUESTION 1 **[20]**

Contrast the following:

a) Innate immunity/adaptive immunity (5 marks)

b) Light/heavy chains of antibody molecule (5 marks)

c) Cellular/humoral (antibody-mediated) immune system (5 marks)

d) Antigens/antibodies (5 marks)

QUESTION 2 **[20]**

a) State the Hardy-Weinberg Law. (5 marks)

b) Using examples, explain the two most important forces that are applied in changing gene frequencies in a population. (10 marks)

c) Three allelic variants, A, B and C, of the G3PDH enzyme in plaice (*Pleuronectes platessa*), a species of fish collected in spawning condition from the North Sea, were found in a sample of 178 fish. The genotypes were distinguishable by electrophoresis, and the frequencies in the sample were:

Genotype	AA	AB	BB	AC	BC	CC
Frequency (%)	9.6	48.3	34.3	2.8	5.0	0.0

What are the gene frequencies in the sample? (5 marks)

QUESTION 3 **[20]**

a) Using illustrations, explain the following structural mutations: deletions, translocations, inversions and duplications. (12 marks)

b) How do duplications arise? (2 marks)

c) Using examples, explain the consequences of duplication mutations. (6 marks)