

GWANDA STATE UNIVERSITY



FACULTY OF NATURAL RESOURCES MANAGEMENT AND AGRICULTURE

DEPARTMENT OF ANIMAL PRODUCTION AND HEALTH

BACHELOR OF SCIENCE HONOURS DEGREE IN ANIMAL SCIENCE

ANIMAL BIOTECHNOLOGY

LAS 4208

Semester 2 Examination

April 2024

This examination paper consists of **three** printed pages

Time Allowed: 3 hours
Total Marks: 100
Special Requirements: None
Examiner's Name: Mr D Mlilo

INSTRUCTIONS TO CANDIDATES

1. Answer **ALL** questions in Section A
2. Answer **ONLY TWO** questions in Section B

MARK ALLOCATION

QUESTION	MARKS
SECTION A	60
SECTION B	40
TOTAL ATTAINABLE MARKS	100

SECTION A: ANSWER ALL QUESTIONS IN THIS SECTION

Question 1

(a) Define the following terms used in biotechnology:

- i. Clone; [2]
- ii. Endonuclease; [2]
- iii. Viral vector; [2]
- iv. Gene therapy; and [2]
- v. Stem cell. [2]

(b) Briefly discuss the merits and demerits of DNA vaccines. [10]

Question 2

(a). Write short notes on the use of transgenic animals in animal production. [10]

(b). List any 5 requirements for gene (cell based) cloning. [10]

Question 3

Write short notes on the following breeding technologies:

- i. Semen sexing; [5]
- ii. Multiple ovulation and embryo transfer (MOET); [5]
- iii. In-vitro fertilisation; and [5]
- iv. Heat synchronisation. [5]

SECTION B: ANSWER ONLY TWO (2) QUESTIONS FROM THIS SECTION

Question 4

Discuss the possible application of biotechnology in animal health. [20]

Question 5

With the aid of a diagram, show the steps followed in producing a transgenic

Fig. [20]

Question 6

Write short notes on the following:

- i. Probes; [4]
- ii. Single nucleotide polymorphism; [4]
- iii. Pluripotent cells; [4]
- iv. Multipotent cells; and [4]
- v. Xenotransplantation. [4]

Question 7

Discuss the hormonal and non-hormonal oestrous synchronisation. [20]

END OF QUESTION PAPER