



FACULTY OF LIFE SCIENCES  
DEPARTMENT OF ANIMAL SCIENCE

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BACHELOR OF SCIENCE HONOURS DEGREE IN ANIMAL SCIENCE

Animal Physiology (LAS 2105)

SEMESTER 1 EXAMINATION

February 2022

Time Allowed: 3 hours  
Special Requirements: None  
Examiner's Name: K. Mafunga

***Instructions to Candidates:***

1. The paper consists of six questions, answer ***ALL*** questions in ***Section A*** and ***ANY TWO*** in ***Section B***.
2. Marks for each question are shown in brackets. Where a question has subdivisions, the marks for each subdivision are given.
3. Illustrate your answer, where applicable, with large clearly labelled diagrams.

**MARK ALLOCATION**

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

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**SECTION A: ANSWER ALL QUESTIONS IN THIS SECTION**

**Question 1**

- a) Explain the relationship between an antigen and an antibody. [4 marks]
- b) Explain how the following assist in defense against pathogens:
- (i) Epidermis of skin [2 marks]
  - (ii) Mucus [2 marks]
  - (iii) Cilia [2 marks]
  - (iv) Saliva. [2 marks]
- c) Describe the cellular changes which take place in the interior part of the udder during parturition. [4 marks]
- d) State four functions of the esophageal groove in the calf. [4 marks]

**Question 2**

- a) Outline the autocrine control of galactopoiesis in mammals. [10 marks]
- b) Explain the role of the following hormones in the control of homeostasis in the nephron:
- (i) Antidiuretic hormone [3 marks]
  - (ii) Angiotensin II [3 marks]
  - (iii) Atrial natriuretic peptide [2 marks]
  - (iv) Parathyroid hormone. [2 marks]

**Question 3**

- a) Illustrate how the following hormones can be used in the manipulation of the estrous cycle:
- (i) Progesterone [2 marks]
  - (ii) Prostaglandin F<sub>2α</sub>. [2 marks]
- b) Using examples differentiate negative feedback and positive feedback in endocrinology. [4 marks]
- c) With aid of diagrams, describe the three mechanisms of hormone delivery. [6 marks]
- d) Relate the anatomy to the function of the alveoli in mammals. [6 marks]

**SECTION B. ANSWER ANY TWO QUESTIONS IN THIS SECTION**

**Question 4**

- a) State five effects of hormonal action. **[5 marks]**
- b) Describe hormone action under the following headings:
- (i) mechanism of action of a named steroid hormone. **[5 marks]**
  - (ii) cyclic AMP second messenger system of hormonal action. **[10 marks]**

**Question 5**

Describe milk ejection under the following headings:

- (i) the pathways of the milk ejection reflex. **[10 marks]**
- (ii) inhibition of the milk ejection reflex. **[10 marks]**

**Question 6**

- a) Write short notes on the regulation of the cardiac cycle. **[10 marks]**
- b) Highlight the physiological changes that assist animals to survive under cold temperatures. **[10 marks]**

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**END OF QUESTION PAPER**

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