MARKING GUIDELINES

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SOUTH AFRICAN COMPREHENSIVE ASSESSMENT INSTITUTE

SUID-AFRIKAANSE KOMPREHENSIEWE ASSESSERINGSINSTITUUT

FINAL APPROVED MARKING GUIDELINES	
DATE OF MEETING	
UMALUSI MODERATOR	
CHIEF MARKER	
INTERNAL MODERATOR	

SECTION A

QUESTION 1

1.1 **MULTIPLE CHOICE**

1.1.1 A ✓✓

1.1.2 B ✓✓

1.1.3 B ✓✓

1.1.4 A ✓✓

1.1.5 C ✓✓

1.1.6 B ✓✓

1.1.7 C ✓✓

1.1.8 B ✓✓

1.1.9 A ✓✓

1.1.10 D ✓✓ (10x2) **(20)**

1.2 **MATCHING COLUMN**

1.2.1 B only ✓✓

1.2.2 Both A & B ✓✓

1.2.3 A only ✓✓

1.2.4 None ✓✓

1.2.5 A only ✓✓ (5x2) **(10)**

1.3 **AGRICULTURAL TERM**

1.3.1 Jejunum ✓✓

1.3.2 Radiation ✓✓

1.3.3 Prostate ✓✓

1.3.4 Hermaphrodite ✓✓

1.3.5 Enucleation ✓✓ (5x2) **(10)**

1.4 **UNDERLINED WORD**

1.4.1 Cardiac ✓

1.4.2 Adrenaline ✓

1.4.3 Mediastinum ✓

1.4.4 Placenta ✓

1.4.5 Congenital ✓ (5x1) **(5)**

TOTAL SECTION A: [45]

SECTION B

QUESTION 2

2.1 Poultry digestive system

2.1.1 a) 6 ✓ – blind caeca ✓ (2)
b) 1 ✓ – crop ✓ (2)
c) 2 ✓ – pro-ventriculus ✓ (2)

2.1.2 Small intestines and adaption

Small intestines ✓

- Adapted for digestion and absorption of nutrients:
  - Long enough to provide sufficient absorption area. ✓
  - Many folds increase surface area for absorption. ✓
  - Villi and micro-villi also increase surface area for absorption. ✓
  - The wall of the small intestines is heavily muscled to allow to food material to move along by peristalsis and to assist in mixing enzymes. ✓
  - Many capillaries in folds of intestine for absorption. ✓
  - Thin layer of epithelium cells enhances absorption. ✓
  - Lacteal for absorption of fatty acids and glycerol. ✓
  - Walls are moist, with mucous substances that are produced, and are elastic ✓

(1 + any 3) (4)

2.1.3 Comparison of structural differences between poultry and pigs' alimentary canals

Poultry: Have a monogastric (single-chambered) digestive system but with specialised organs like the crop, proventriculus, and gizzard.

- No teeth, they don't chew food.
- Food is swallowed whole and moistened by saliva.
- The proventriculus is the glandular stomach where enzymes like pepsin and HCl begin protein digestion.
- Then food enters the gizzard, which mechanically grinds food using grit.
- Have two caeca (singular: caecum), which perform limited fermentation of undigested materials (mainly cellulose).
- The large intestine is short and absorbs water and some minerals.
- Less efficient in digesting fibrous feed due to a shorter large intestine and less microbial fermentation.

(Any 2 for poultry)

Pigs: Also have a monogastric digestive system, but it resembles the human system more closely and lacks specialised structures like the gizzard.

- Have teeth for mechanical digestion (chewing), which increases the surface area for enzymes.
- Have a single caecum and a longer colon where some fermentation of fibrous material occurs by bacteria, producing volatile fatty acids that can be absorbed.
- More efficient at fermenting and absorbing some nutrients from fibrous feeds because of a larger and more active hindgut.

(Any 2 for pigs) (4)

2.2 Ruminants

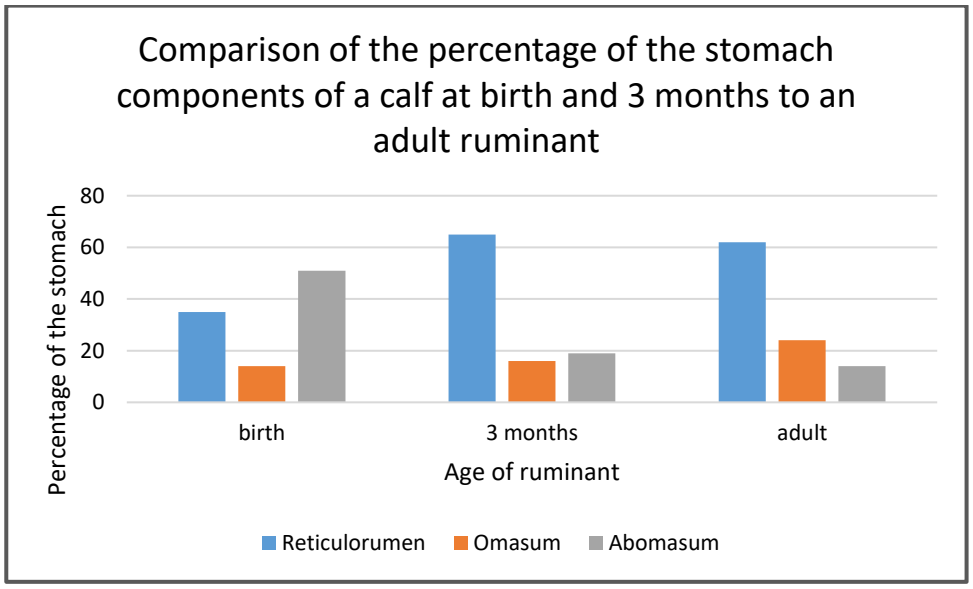
2.2.1 Underdeveloped stomach

Rumen/reticulum/omasum (1)

2.2.2 Pathway of milk through calf's digestive tract

In young calves that are still suckling, the milk swallowed will by-pass the rumen and reticulum. ✓ Heavy muscular folds in the walls of the rumen and reticulum form an oesophageal groove ✓ that leads directly into the abomasum. ✓ Rennin in the abomasum will coagulate the milk. ✓ This slows the passing of the milk through the abomasum and allows time for digestion. ✓ (5)

2.2.3 Bar graph comparison of calf vs adult ruminant



Marking guideline for bar graph

	Mark allocation
Heading indicating the two variables (age and percentage) for graph	1
Label of y-axis and scale for y-axis	2
Label x-axis	1
Correct plotting of bars (for the three different compartments, reticulorumen, omasum and abomasum)	3
Key indicating the different compartments	1

(8)

2.3 Composition of feeds

2.3.1 Nutritive ratio

Nutritive ratio (NR) = 1 : $\frac{\%\text{ digestible non-nitrogen nutrients}}{\%\text{ digestible protein}}$

= 1 : $\frac{TDN - DP}{DP}$ ✓

= 1 : $\frac{72\% - 15\%}{15\%}$ ✓ or $\frac{57\%}{15\%}$

NR = 1 : 3,8 **OR** 1 : 4✓ (3)

2.3.2 Recommendation of feed for production

Feed C ✓ (1)

2.3.3 **Reason for recommendation**

Feed C has a narrower nutritive ratio. ✓
Feed C has a comparatively higher protein content necessary for production. ✓

(Any 1) (1)

2.3.4 **Most economical feed**

Feed B ✓ (1)

2.3.5 **Reason for economical feed**

Feed B has the lowest protein content. ✓
Proteins are more expensive than carbohydrates, then the lesser the protein, the cheaper the feed. ✓

(Any 1) (1)

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QUESTION 3: ANIMAL PRODUCTION, PROTECTION AND CONTROL

3.1 Sheep feedlot

3.1.1 Production system

Intensive ✓ (1)

3.1.2 Justification for production system

High stocking density. ✓
High input costs. ✓
Sheep are kept in a restricted enclosed area. ✓
Sheep are fed with no access to natural pastures. ✓

(Any 1) (1)

3.1.3 TWO factors to ensure increased production

Nutrition/feeding ✓
Reproduction/breeding ✓
General management ✓

(Any 2) (2)

3.2 Feed intake of growing broilers at different ambient temperatures

3.2.1 The higher the environmental temperature ✓ the less the feed intake. ✓ (2)

3.2.2 At a low environmental temperature (14˚C) the broilers will use the energy from feed to stay warm ✓ and the energy will not be used to growth, meaning less production. ✓ (2)

3.2.3 ± 22–25 ˚C ✓ (Temperature and unit must be mentioned for one mark.) (1)

3.3 Cattle flight zone

3.3.1 Definition of flight zone

The distance that animals like to keep ✓ between themselves and a threat or danger. ✓ (2)

3.3.2 TWO factors influencing the distance of flight zone

Animal temperament: More nervous animals will have larger flight zones. ✓
Experience with humans: Animals familiar to human contact have smaller flight zones. ✓ (2)

3.3.3 **Letters to indicate area or action**

a) B ✓ (1)
b) C ✓ (1)
c) D ✓ (1)
d) E ✓ (1)

3.3.4 **Handling to reduce stress in cattle**

Approach the cattle calmly and avoid entering the flight zone too quickly. ✓
Positioning near the point of balance to guide movement effectively. ✓
Use quiet, consistent sounds or tools like flags to direct movement without stress. ✓ (3)

3.4 **Herd health**

3.4.1 **TWO visible symptoms of a sick animal**

- Loss of appetite. ✓
- Lethargy or reduced movement. ✓
- Unusual discharge from the nose, eyes, mouth or reproductive tract. ✓
- Rough dull coat and hair loss. ✓
- Fever. ✓
- Teeth grinding. ✓
- Rapid pulse rate. ✓
- Dirty hocks and tail area. ✓
- Discoloured urine. ✓

(Any 2) (2)

3.4.2 **Importance of isolating a sick animal**

Isolating a sick animal helps prevent the spread of contagious diseases to other animals in the herd, ✓ reducing overall losses and ensuring the health of the remaining stock. ✓ (2)

3.4.3 **Define *'biosecurity'***

Measures taken to protect ✓ livestock from infectious diseases, parasites, and pests. ✓ (2)

3.4.4 **TWO measures to improve animal health**

- Restricting access to the farm and disinfecting equipment to prevent the introduction of diseases. ✓
- Quarantining new or sick animals to prevent the spread of diseases to healthy livestock. ✓ (2)

3.5 Intestinal parasites

3.5.1 Naming the condition the sheep suffer from.

The symptoms (weight loss, pale gums, weakness) suggest anaemia ✓ (1)

3.5.2 TWO preventative measures for internal parasites

- Deworming programme: Regular administration of anti-helminthic medication. ✓
- Pasture management: Rotate grazing areas to break the parasite lifecycle. ✓
- Improved hygiene: Keep feeding and watering areas clean to prevent contamination. ✓

(Any 2) (2)

3.5.3 Economic and health implications of failing to control internal parasites

- Economic implications: Reduced weight gain and productivity ✓ can lead to financial losses due to lower market value ✓ and increased veterinary costs. ✓

(Any 2)

- Health implications: Severe parasite infestations can weaken animals, ✓ making them more susceptible to other diseases ✓ and potentially leading to death. ✓

(Any 2) (4)

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QUESTION 4: REPRODUCTION

4.1 Male reproductive organs

4.1.1 Letter and name of reproductive organs

a) A ✓ – seminal vesicles/vesicular glands✓ (2)
b) H/J ✓– epididymis ✓ (2)
c) B ✓ – prostate ✓ (2)

4.1.2 Process that takes place in part I

Spermatogenesis/meiosis ✓ (1)

4.1.3 TWO congenital defects of part I which may cause sterility in bulls

Cryptorchidism ✓ – the condition where the testes do not descend into the scrotum and remain in the abdominal cavity. ✓
Hypoplasia ✓ – the testes are underdeveloped. ✓ (4)

4.2 Female reproductive organs

4.2.1 Identify A

Ovum/Egg cell/Oocyst✓ (1)

4.2.2 Hormones responsible for the triggering of release of A

luteinising hormone and follicle stimulating hormone

- Responsible for maturation of oocysts. ✓
- Regulating the growth and development of the dominant follicle. ✓
- Together with oestrogen causing the follicle to rupture during ovulation and release of the egg cell. ✓ (3)

4.2.3 Process B

Fertilisation ✓ (1)

4.2.4 Structure of C (morula)

A mulberry-like structure with 16 cells formed after fertilisation ✓ which contains a central cell mass surrounded by a layer of cells. ✓ (2)

4.2.5 Progesterone influences on implantation

- Preparing the uterus to receive the fertilised egg. ✓
- Maintaining a proper uterine environment to maintain pregnancy. ✓
- Have a relaxing effect on the uterus, preventing contraction that might disturb pregnancy. ✓ (3)

4.3 **Reproductive process**

4.3.1 **Identification of reproductive process**

Reproductive cloning/nuclear transfer ✓ (1)

4.3.2 **Define the cloning process**

A process through which an identical copy ✓ of the donor animal is produced from its nucleus. ✓ (2)

4.3.3 **Labels for B, C and G**

B – Egg cell ✓
C – Nucleus with desired genes ✓
G – Clone/individual with desired genes ✓ (3)

4.3.4 **TWO disadvantages of cloning with the use of surrogates**

- Expensive and inefficient. ✓
- Cloned animals die prematurely. ✓
- Dystocia problems can arise because clones can be very large at birth. ✓
- Cloned animals do not have good immune systems. ✓
- Clones can produce oversize offspring with enlarged hearts, immature lungs and damaged kidneys. ✓

(Any 2) (2)

4.4

4.4.1 **Identification of normal position**

B ✓ (1)

4.4.2 **Explain normal birth position**

In the anterior presentation, the head and front legs come out first. ✓ and the stretched hind legs come last✓ (2)

4.4.3 **Presentation in D**

Breach ✓ (1)

4.4.4 **TWO indirect causes of retention of placenta**

- Intensive stress and nutritional deficiencies or imbalances (management problems). ✓
- Cows infected with infectious organisms (brucellosis, infectious bovine rhinotracheitis, etc.).✓
- Shortened or prolonged pregnancies. ✓

(Any 2) (2)

[35]

TOTAL SECTION B: [105]

GRAND TOTAL: [150]

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