



Province of the  
**EASTERN CAPE**  
EDUCATION

Iphondo leMpuma Kapa: Isobe leMfundu  
Provincie van die Oos-Kaap: Département van Onderwys  
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## NATIONAL SENIOR CERTIFICATE

**GRADE 12**

**JUNE 2025**

### **AGRICULTURAL SCIENCES MARKING GUIDELINE**

**MARKS: 150**

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These marking guidelines consist of 8 pages.

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**SECTION A****QUESTION 1**

1.1	1.1.1	A ✓✓	
	1.1.2	B ✓✓	
	1.1.3	B ✓✓	
	1.1.4	D ✓✓	
	1.1.5	C ✓✓	
	1.1.6	B ✓✓	
	1.1.7	A ✓✓	
	1.1.8	A ✓✓	
	1.1.9	C ✓✓	
	1.1.10	B ✓✓	(10 x 2) (20)
1.2	1.2.1	None ✓✓	
	1.2.2	B only ✓✓	
	1.2.3	Both A and B✓✓	
	1.2.4	Both A and B✓✓	
	1.2.5	A only✓✓	(5 x 2) (10)
1.3	1.3.1	Essential amino acids ✓✓	
	1.3.2	Homeothermic ✓✓	
	1.3.3	Ejaculation ✓✓	
	1.3.4	Buffer ✓✓	
	1.3.5	Posterior presentation ✓✓	(5 x 2) (10)
1.4	1.4.1	Chyme ✓	
	1.4.2	Balling ✓	
	1.4.3	Dry ✓	
	1.4.4	Ovogenesis / oogenesis ✓	
	1.4.5	Anovulation ✓	(5 x 1) (5)

**TOTAL SECTION A: 45**

**SECTION B****QUESTION 2: ANIMAL NUTRITION****2.1 2.1.1 Identification labels**

- C – Liver ✓  
I – Pancreas ✓

(2)

**2.1.2 Classification of animal**

- Non-ruminant / monogastric animal ✓

(1)

**2.1.3 Adaptations of part G**

- It is long ✓
- It has villi ✓
- Has many folds ✓

(Any 2 x 1) (2)

**2.1.4 Reasons why the part D corresponds with the abomasum**

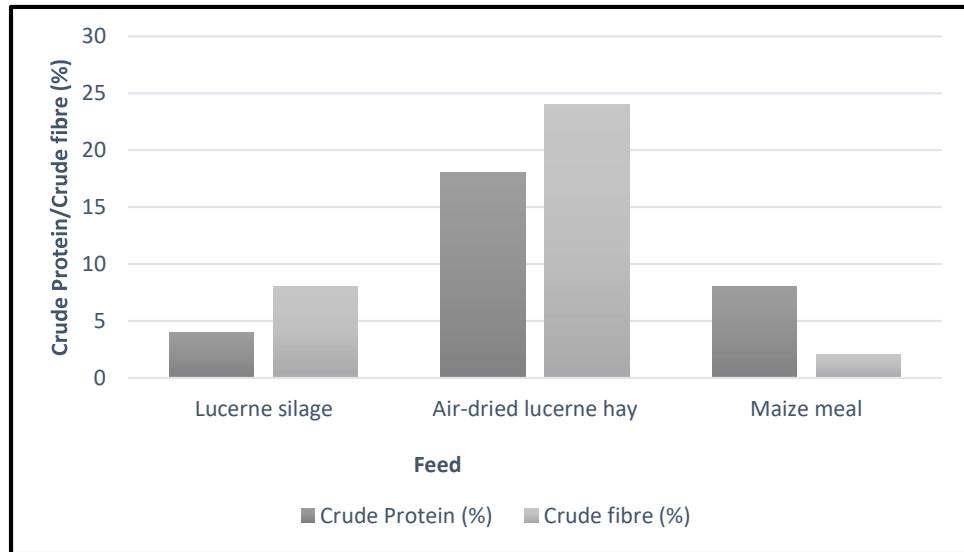
- Part D secretes gastric juice which contains enzymes ✓ that carry out chemical digestion just like in the abomasum ✓

(2)

**2.1.5 Explanation for the difference in pH between ingesta in part H and part G**

In part H gastric juice is secreted which contains HCl that makes stomach ingesta acidic ✓ while in part G, the ingesta is alkaline due to alkaline secretions from accessory like such as the liver, pancreas, Brunner's glands and Glands of Lieberkühn ✓

(2)

**2.2 2.2.1 Bar graph showing the relationship between crude fibre and crude protein in different feeds****Checklist**

- Correct heading ✓
- X-axis correctly calibrated with label (Feed) ✓
- Y-axis correctly calibrated with label (Crude fibre/crude protein content) ✓
- Graph type (bar graph) ✓
- Correct units (%) ✓
- Accuracy (80%+ correct plotting) ✓

(6)

2.2.2 **Identification of a concentrate feed**  
Maize meal

(1)

2.3 2.3.1 **Calculation of Nutritive Ratio of FEED A**

$$\begin{aligned}\text{Nutritive Ratio} &= 1 : \frac{\% \text{ TDN} - \% \text{ DP}}{\% \text{ DP}} \times 100 \checkmark \\ &= 1 : \frac{85\% - 35\%}{35\%} \times 100 \checkmark \\ &= 1 : 1,4 \checkmark\end{aligned}$$

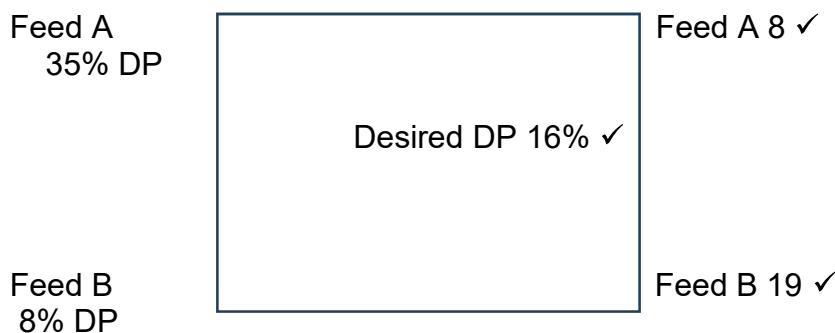
(3)

2.3.2 **Identification of a feed that will be suitable for feeding a young animal**

Feed A ✓ because it has a narrow nutritive ratio and therefore rich in proteins required for growth ✓

(2)

2.3.3 **Pearson Square to determine the ratio at which the two feeds must be mixed**



Ratio of Feed A : Feed B

8 : 19 ✓

(4)

2.3 2.4.1 **TWO other substances that can be administered by farmers to increase the growth rate of animals**

- Antibiotics ✓
- Growth hormones ✓

(2)

2.4.2 **Explanation of how the administration of tranquilisers results in higher animal growth rates**

Tranquillisers make animals calm ✓ which make them to eat more and grow faster ✓

(2)

2.5 2.5.1 **Calculation of how much feed each heifer will receive per day in January**

$$\begin{aligned}\text{Feed requirement /heifer/day} &= \frac{24\ 000 \text{ kg}}{80} \checkmark \\ &= 300 \text{ kg/31 days} \checkmark \\ &= 9,67 \text{ kg} \checkmark\end{aligned}$$

(3)

2.5.2 **THREE reasons to justify fodder production planning**

- Cost effective feeding of animals ✓
- Safe use of natural resources ✓
- Fully meet the animals' feed requirements✓

(3)

[35]

**QUESTION 3: ANIMAL PRODUCTION, PROTECTION AND CONTROL**

- 3.1 3.1.1 **Identification of a production system associated with feedlot farming**  
Intensive production ✓ (1)
- 3.1.2 **TWO reasons in the passage above to justify answer in QUESTION 3.1.1**
  - Requires housing ✓
  - Requires equipment ✓ (2)
- 3.1.3 **Difference between commercial and subsistence farming**  
Commercial farming involves producing crops, and rearing livestock for sale ✓ while subsistence farming meant to provide for the needs of a family or small group ✓ (2)
- 3.2 3.2.1 **Identification of the pen**  
Farrowing pen ✓ (1)
- 3.2.2 **Identification of TWO design features visible in the pen that enable the optimal functioning of the pen**
  - It has open sides ✓
  - Creep mats / drainage grids ✓
  - A farrowing / gestation crate ✓ (Any 2 x 1) (2)
- 3.2.3 **Explanation of how the features mentioned in QUESTION 3.2.2 ensures optimum functioning of the pen**
  - It has open sides to allow for good ventilation ✓
  - Creep mats / Drainage grids to allow drainage of water ✓
  - A farrowing crate / gestation crate to prevent the mother crashing its piglets ✓ (Any 2 x 1) (2)
- 3.2.4 **TWO roles of shelter in animal production**
  - Allows for control of environmental conditions ✓
  - Protects animals from theft and predation ✓
  - Allows for easier control of pests and pathogens ✓ (Any 2 x 1) (2)
- 3.3 3.3.1 **Identification of tools A and B**  
**A – Burdizzo ✓**  
**B – Elastrator ✓** (2)
- 3.3.2 **Identification of tool with the given advantage:**  
(a) – B ✓  
(b) – A ✓ (2)
- 3.3.3 **Role of castration in animal reproduction**  
To allow only the best bulls to service the cows ✓ in attempt to optimise production. ✓ (2)
- 3.4 3.4.1 **Identification the disease described in the passage**  
Bird flu /Avian influencer ✓ (1)

3.4.2	<b>Classification of the disease based on its causative pathogen</b>	Viral disease ✓	(1)
3.4.3	<b>Identification of a disease control measure that is mentioned in the passage above</b>	Culling ✓	(1)
3.4.4	<b>TWO economic impacts of animal diseases to a country's economy</b>	<ul style="list-style-type: none"> <li>• Export bans ✓</li> <li>• Loss of foreign currency earnings ✓</li> <li>• Loss of production ✓</li> </ul>	(Any 2 x 1) (2)
3.5	<b>3.5.1 Identification of tick shown in the diagram</b>	Bont tick ✓	(1)
3.5.2	<b>Classification of the tick based on the number of hosts it needs to complete its life cycle</b>	3 host tick ✓	(1)
3.5.3	<b>An example of a disease in which the parasite is a vector</b>	Heartwater ✓	(1)
3.5.4	<b>TWO effects of ticks on animals</b>	<ul style="list-style-type: none"> <li>• They transmit diseases ✓</li> <li>• Damage skin ✓</li> <li>• Negative influence on the animal's condition ✓</li> <li>• Causes wounds ✓</li> <li>• Loss of body parts – ears, teats, tails etc. ✓</li> <li>• Blood loss ✓</li> </ul>	(Any 2 x 1) (2)
3.5.5	<b>TWO measures farmers can take to prevent build-up of ticks in pasture</b>	<ul style="list-style-type: none"> <li>• Rotational grazing ✓</li> <li>• Frequent dipping ✓</li> </ul>	(2 x 1) (2)
3.6	<b>3.6.1 Reason for administering the following when animals are poisoned:</b>		
	(a) Vinegar – Neutralises the alkalosis ✓		(1)
	(b) Glucose – To maintain liver function ✓		(1)
	(c) Activated Charcoal – Absorbs the poison ✓		(1)
3.6.2	<b>TWO measures farmers can take to reduce the risk of their animals being poisoned by urea</b>	<ul style="list-style-type: none"> <li>• Ensure animals have sufficient salt free water ✓</li> <li>• Cover urea licks against the rain ✓</li> <li>• Accustom animals to urea and salt licks ✓</li> </ul>	(Any 2 x 1) (2)
			[35]

**QUESTION 4: ANIMAL REPRODUCTION****4.1 4.1.1 Identification of gender**

Male / Bull ✓

(1)

**4.1.2 Identification of the parts**

A – Prostate gland ✓

D – Vas deferens ✓

E – Testis ✓

(3)

**4.1.3 Functions of part B**

• Provides nutrition for the spermatozoa ✓

• Gives the seminal fluids correct pH ✓

• Gives the seminal fluids correct osmotic pressure ✓ (Any 2 x 1) (2)

**4.1.4 Description of how the part labelled F regulates the temperature of the testicles**

When it is cold the scrotum contracts, pulling the testes up against the body ✓ and when it's hot the scrotum relaxes allowing the testicles to hang away from the body ✓

(2)

**4.2 4.2.1 Name of the rest phase of the oestrus cycle**

Di-oestrus ✓

(1)

**4.2.2 Description of TWO visible signs of oestrus**

- Swollen, reddened vulva ✓
- Mucus flows from the vulva ✓
- Mounting other cows and allowing them to mount her ✓
- Cow goes to the bull and allows mating ✓
- Restlessness/ cow walks around ✓

(Any 2 x 1) (2)

**4.2.3 An example of a heat detection aid**

- Pedometer ✓
- Heat mount detector ✓
- Tail chalking ✓
- Chin-ball marker ✓

(Any 1 x 1) (1)

**4.2.4 TWO hormones that are closest to their peak during oestrus**

- Luteinising hormone ✓
- Oestrogen ✓

(2)

**4.3 4.3.1 Identification of gestation stage shown in the diagram**

Foetal phase ✓

(1)

**4.3.2 TWO functions of part D**

- It protects the foetus from mechanical shocks ✓
- Acts as a lubricant during the birth parturition ✓

(2)

<b>4.3.3</b>	<b>Identification of organ</b>	
(a)	F ✓	(1)
(b)	B ✓	(1)
(c)	A ✓	(1)
<b>4.3.4</b>	<b>Differentiation of mummification from maceration</b>	
	Maceration involves decay of soft tissues of the foetus ✓ while Mummification involves formation of a hardened and dried foetus ✓	(2)
<b>4.4</b>	<b>4.4.1 Recommendation of an appropriate method</b>	
(a)	Cloning ✓	(1)
(b)	Embryo transfer ✓	(1)
(c)	Artificial insemination ✓	(1)
<b>4.4.2</b>	<b>Definition of oestrus synchronisation</b>	
	Oestrus synchronisation is the process of manipulating the oestrus cycle that results in standing oestrus (heat) ✓ in the majority of animals in a short time ✓	(2)
<b>4.4.3</b>	<b>Common disadvantages of the mentioned techniques</b>	
	<ul style="list-style-type: none"> <li>• They are expensive ✓</li> <li>• They require specific skills ✓</li> </ul>	(2)
<b>4.5</b>	<b>4.5.1 Identification of phenomenon</b>	
	Milk let down reflex ✓	(1)
<b>4.5.2</b>	<b>Hormone that inhibits milk release</b>	
	Adrenaline ✓	(1)
<b>4.5.3</b>	<b>The role of the hormone oxytocin on the milk release process</b>	
	Causes contraction of myoepithelial cells ✓ surrounding the alveolus. ✓	(2)
<b>4.5.4</b>	<b>Relationship between feed roughage content and milk butterfat content</b>	
	The higher the roughage content of the feed ✓ the higher the butterfat content of the milk ✓	(2) [35]

**TOTAL SECTION B:** 105  
**GRAND TOTAL:** 150