



Province of the
EASTERN CAPE
EDUCATION

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NATIONAL SENIOR CERTIFICATE

GRADE 12

JUNE 2025

AGRICULTURAL SCIENCES MARKING GUIDELINE

MARKS: 150

These marking guidelines consist of 8 pages.

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 | Ovigenesis / 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

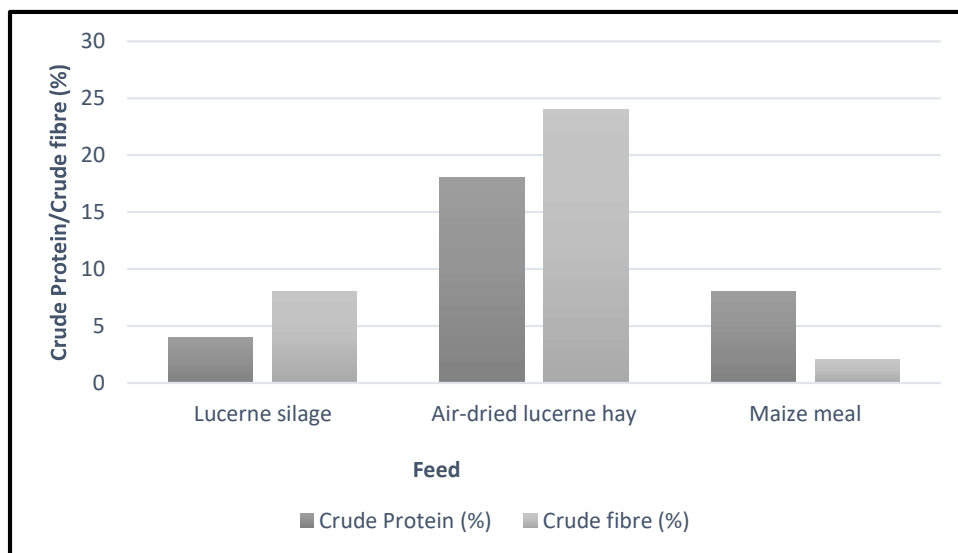
Part D secretes gastric juice which contains enzymes ✓ that carry out chemical digestion just like in the abomasum ✓

(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

$$\text{Nutritive Ratio} = 1 : \frac{\% \text{TDN} - \% \text{DP}}{\% \text{DP}} \times 100 \checkmark$$

$$= 1 : \frac{85\% - 35\%}{35\%} \times 100 \checkmark$$

$$= 1 : 1,4 \checkmark$$

(3)

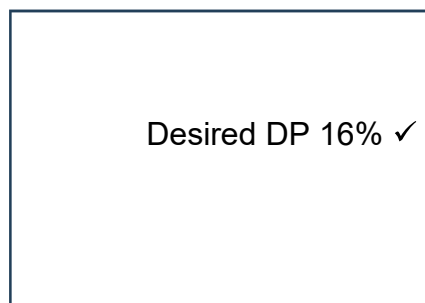
2.3.2 Identification of a feed that will be suitable for feeding a young animal

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

(2)

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

Feed A
35% DP



Feed A 8 \checkmark

Feed B
8% DP

Feed B 19 \checkmark

Ratio of Feed A : Feed B

8 : 19 \checkmark

(4)

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

- Antibiotics \checkmark
- Growth hormones \checkmark

(2)

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

Tranquilisers make animals calm \checkmark which make them to eat more and grow faster \checkmark

(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 \checkmark
- Safe use of natural resources \checkmark
- Fully meet the animals' feed requirements \checkmark

(3)

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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 **Classification of the disease based on its causative pathogen**
Viral disease ✓ (1)
- 3.4.3 **Identification of a disease control measure that is mentioned in the passage above**
Culling ✓ (1)
- 3.4.4 **TWO economic impacts of animal diseases to a country's economy**
• Export bans ✓
• Loss of foreign currency earnings ✓
• Loss of production ✓ (Any 2 x 1) (2)
- 3.5 3.5.1 **Identification of tick shown in the diagram**
Bont tick ✓ (1)
- 3.5.2 **Classification of the tick based on the number of hosts it needs to complete its life cycle**
3 host tick ✓ (1)
- 3.5.3 **An example of a disease in which the parasite is a vector**
Heartwater ✓ (1)
- 3.5.4 **TWO effects of ticks on animals**
• They transmit diseases ✓
• Damage skin ✓
• Negative influence on the animal's condition ✓
• Causes wounds ✓
• Loss of body parts – ears, teats, tails etc. ✓
• Blood loss ✓ (Any 2 x 1) (2)
- 3.5.5 **TWO measures farmers can take to prevent build-up of ticks in pasture**
• Rotational grazing ✓
• Frequent dipping ✓ (2 x 1) (2)
- 3.6 3.6.1 **Reason for administering the following when animals are poisoned:**
- (a) Vinegar – Neutralises the alkalosis ✓ (1)
- (b) Glucose – To maintain liver function ✓ (1)
- (c) Activated Charcoal – Absorbs the poison ✓ (1)
- 3.6.2 **TWO measures farmers can take to reduce the risk of their animals being poisoned by urea**
• Ensure animals have sufficient salt free water ✓
• Cover urea licks against the rain ✓
• Accustom animals to urea and salt licks ✓ (Any 2 x 1) (2)

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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)

4.3.3 Identification of organ

- (a) F ✓ (1)
- (b) B ✓ (1)
- (c) A ✓ (1)

4.3.4 Differentiation of mummification from maceration

Maceration involves decay of soft tissues of the foetus ✓ while
Mummification involves formation of a hardened and dried foetus ✓ (2)

4.4 4.4.1 Recommendation of an appropriate method

- (a) Cloning ✓ (1)
- (b) Embryo transfer ✓ (1)
- (c) Artificial insemination ✓ (1)

4.4.2 Definition of oestrus synchronisation

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)

4.4.3 Common disadvantages of the mentioned techniques

- They are expensive ✓
- They require specific skills ✓ (2)

4.5 4.5.1 Identification of phenomenon

Milk let down reflex ✓ (1)

4.5.2 Hormone that inhibits milk release

Adrenaline ✓ (1)

4.5.3 The role of the hormone oxytocin on the milk release process

Causes contraction of myoepithelial cells ✓ surrounding the alveolus. ✓ (2)

4.5.4 Relationship between feed roughage content and milk butterfat content

The higher the roughage content of the feed ✓ the higher the butterfat content of the milk ✓ (2)

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TOTAL SECTION B: 105
GRAND TOTAL: 150