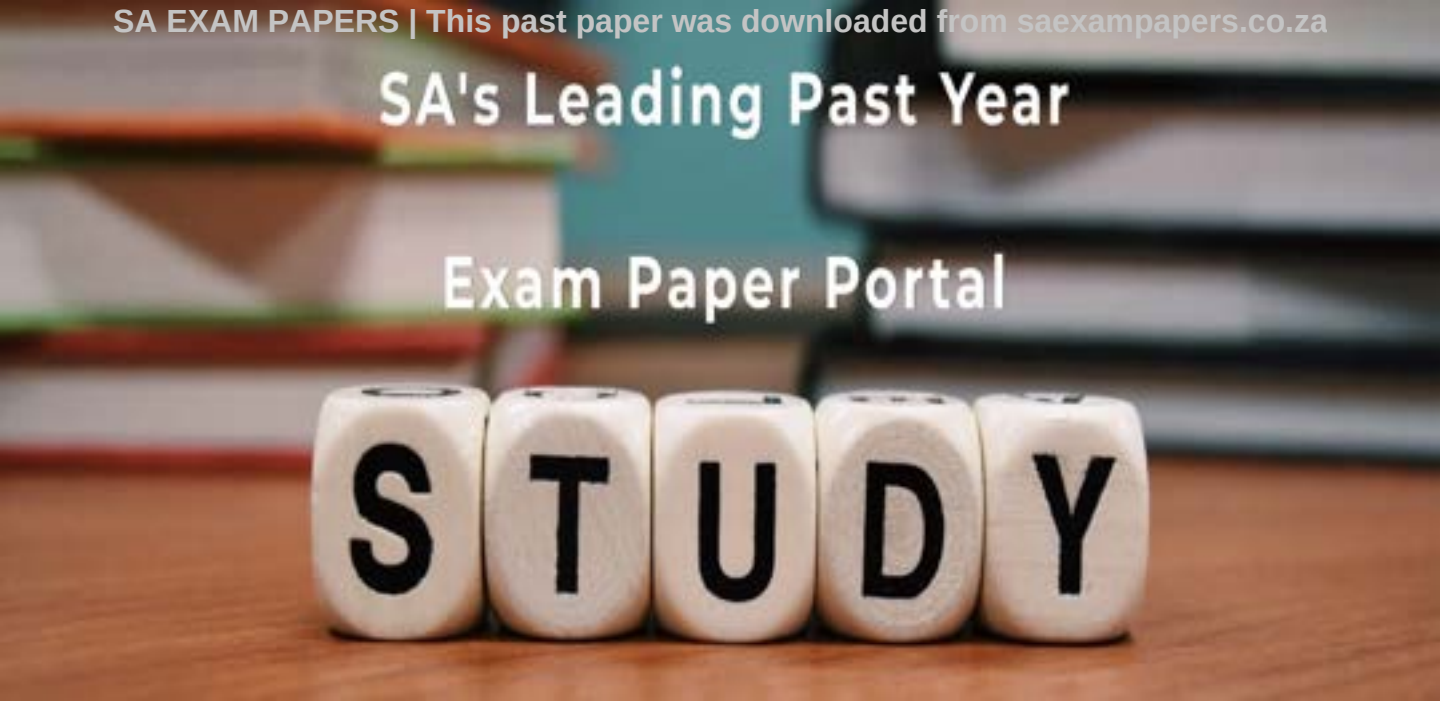

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NATIONAL SENIOR CERTIFICATE

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)

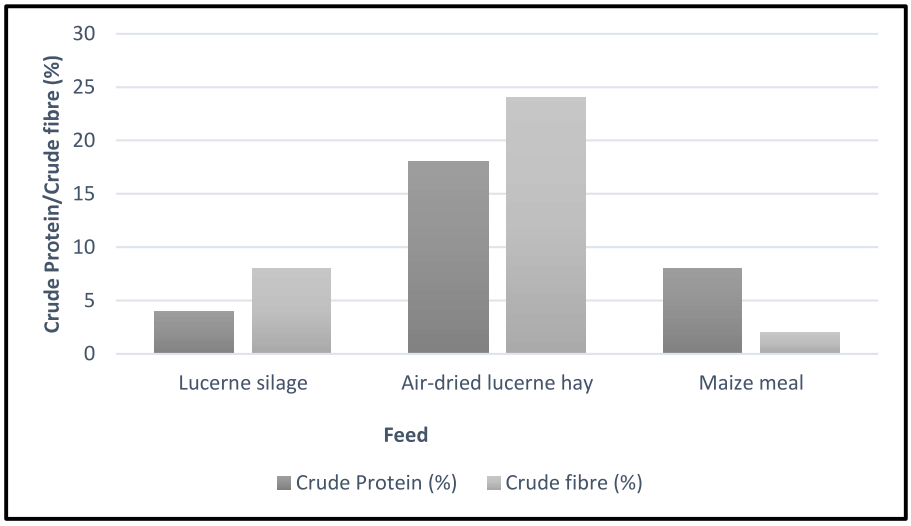
2.1.2 **Classification of animal**
Non-ruminant / monogastric animal ✓ (1)

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**



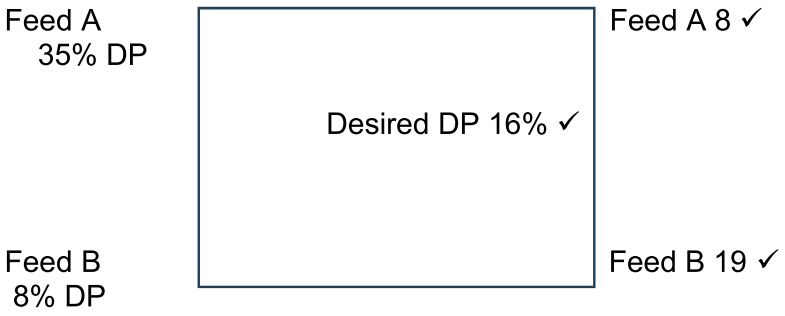
Checklist
- Correct heading ✓
- X-axis correctly calibrated with label (Feed) ✓
- Y-axis correctly calibrated with label (Crude fibre/crude protein content) ✓
- Graph type (bar graph) ✓
- Correct units (%) ✓
- Accuracy (80%+ correct plotting) ✓ (6)

2.2.2 **Identification of a concentrate feed**
Maize meal (1)

2.3 2.3.1 **Calculation of Nutritive Ratio of FEED A**
Nutritive Ratio = $1:\frac{\%\text{ TDN} - \%\text{DP}}{\%\text{DP}} \times 100$ ✓
= $1:\frac{85\% - 35\%}{35\%} \times 100$ ✓
= 1 : 1,4 ✓ (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 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**
Tranquilisers 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**
Feed requirement /heifer/day = $\frac{24\,000\ kg}{80}$ ✓
= 300 kg/31 days ✓
= 9,67 kg ✓ (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)

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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