



# basic education

Department:  
Basic Education  
**REPUBLIC OF SOUTH AFRICA**

## SENIOR CERTIFICATE EXAMINATIONS/ NATIONAL SENIOR CERTIFICATE EXAMINATIONS

**AGRICULTURAL SCIENCES P1**

**MAY/JUNE 2025**

**MARKING GUIDELINES**

DEPARTMENT OF BASIC EDUCATION
PRIVATE BAG X895, PRETORIA 0001
24 -06- 2025
APPROVED MARKING GUIDELINE
PUBLIC EXAMINATION

**MARKS: 150**

**These marking guidelines consist of 11 pages.**

**APPROVED**

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<b>UMALUSI</b> Mr. SM Gcwensa 24 June 2025	<b>UMALUSI</b> Dr. DN Mathobo 24 June 2025	<b>INTERNAL MODERATOR</b> Me. JN Mokhantso 24 June 2025	<b>INTERNAL MODERATOR</b> Mr. RA Seloane 24 June 2025
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**SECTION A****QUESTION 1**

1.1	1.1.1	D ✓✓		
	1.1.2	C ✓✓		
	1.1.3	B ✓✓		
	1.1.4	C ✓✓		
	1.1.5	C ✓✓		
	1.1.6	A ✓✓		
	1.1.7	B ✓✓		
	1.1.8	D ✓✓		
	1.1.9	B ✓✓		
	1.1.10	A ✓✓	(10 x 2)	(20)
1.2	1.2.1	B only ✓✓		
	1.2.2	B only ✓✓		
	1.2.3	None ✓✓		
	1.2.4	Both A and B ✓✓		
	1.2.5	A only ✓✓	(5 x 2)	(10)
1.3	1.3.1	Digestibility coefficient ✓✓		
	1.3.2	Vector ✓✓		
	1.3.3	Caruncles/nodules ✓✓		
	1.3.4	Amnion ✓✓		
	1.3.5	Electro ejaculator ✓✓	(5 x 2)	(10)
1.4	1.4.1	Cafeteria style/free choice/ad lib ✓		
	1.4.2	Rigor mortis ✓		
	1.4.3	Super ovulation ✓		
	1.4.4	Fallopian tubes/oviducts ✓		
	1.4.5	Oestrogen ✓	(5 x 1)	(5)

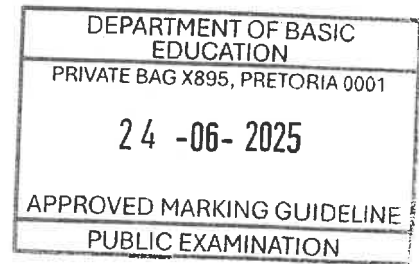
**TOTAL SECTION A: 45**

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**SECTION B**

**QUESTION 2: ANIMAL NUTRITION**



**2.1 The alimentary canal of two farm animals**

**2.1.1 Identification of the diagram**

Diagram B ✓

(1)

**2.1.2 Justification of the answer**

- Presence of a large rumen in relation to the abomasum ✓
- Presence of a smaller abomasum in relation to rumen ✓
- Fully developed fore-stomach ✓
- Absence of the oesophageal groove ✓

(Any 1) (1)

**2.1.3 Function of the oesophageal groove**

It channels milk to pass from the oesophagus to the abomasum ✓

(1)

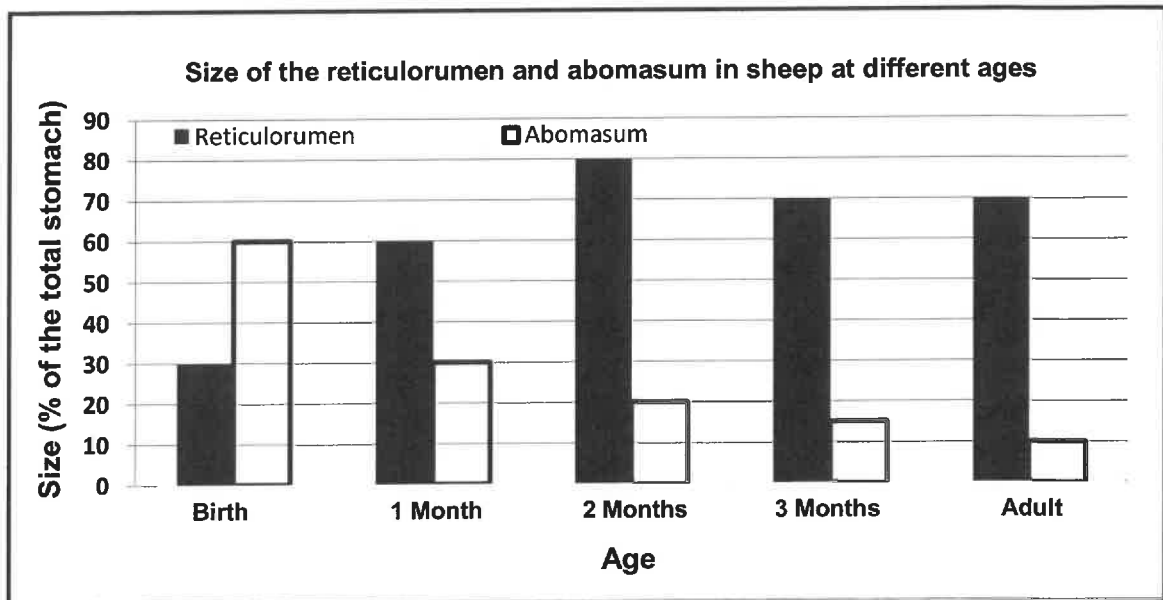
**2.1.4 Identification of the part**

Abomasum ✓

(1)

**2.2 The bar graph**

**2.2.1 Bar graph on the size of the reticulorumen and abomasum of sheep at different ages**



**CRITERIA/RUBRIC/MARKING GUIDELINES**

- Correct heading (with both variables) ✓
- X-axis: Correctly calibrated with label (Age) ✓
- Y-axis: Correctly calibrated with label (Size) ✓
- Correct units (% of the total stomach) ✓
- Combined bar graph ✓
- Accuracy (80% + correctly plotted) ✓

(6)

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2.3 The composition of a ration

2.3.1 Indication of the type of farm animal

Non-ruminant/monogastric ✓ (1)

2.3.2 Reason

- The ration contains high quantities of roughage/hay ✓ which cannot be digested by non-ruminants ✓
- The ration contains urea ✓ which cannot be digested by non-ruminants ✓ (Any 1) (2)

2.3.3 Identification of a feed

- (a) Protein-rich roughage - Lucerne hay ✓ (1)
- (b) Carbohydrate-rich concentrate - Wheat meal ✓ (1)

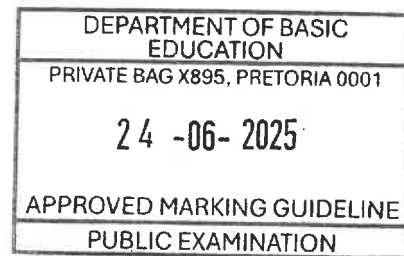
2.4 The digestibility of feeds

Calculation of dry matter of the feed in kg

- $25\text{kg} \times 0,15 = 3,75\text{kg}$  OR  $\frac{15}{100} \times 25 = 3,75\text{kg}$  ✓
- $25\text{kg} - 3,75\text{kg} = 21,25\text{kg}$  ✓

OR

- $\frac{85}{100} \times 25\text{kg}$  ✓
- $= 21,25\text{kg}$  ✓



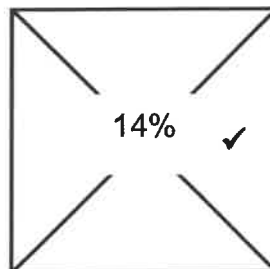
(Any 2) (2)

2.5 The Pearson square

2.5.1 The Pearson square method

Oatmeal: 12% DP

14 parts ✓



Fishmeal: 28% DP

2 parts ✓

Ratio: Oatmeal to fishmeal = 14 : 2 / Fishmeal to oatmeal = 2 : 14 ✓ (4)

2.5.2 Calculation of the percentage of fish meal in the mixture

- $2 + 14 = 16$  ✓
- $\frac{2}{16} \times 100$  ✓
- $= 12,5\%$  ✓ (3)

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2.6 The nutrients available in two different feeds

2.6.1 Identification of a feed

- (a) Fattening of lambs - FEED B ✓ (1)
- (b) Lactating cows - FEED A ✓ (1)

2.6.2 Justification of FEED A

High in protein content/high digestible protein of 17% ✓ (1)

2.6.3 Calculation of the nutritive ratio of feed A

- $NR = 1: \frac{\%TDN - \%DP}{\%DP}$  ✓
- $= 1: \frac{83\% - 17\%}{17\%}$  ✓
- $= 1: 3,9 / 1:4$  ✓

OR

- $NR = 1: \frac{\%DNNS}{\%DP}$  ✓
- $= 1: \frac{66\%}{17\%}$  ✓
- $= 1: 3,9 / 1:4$  ✓

(3)

2.7 The components of the feed

- 2.7.1 Identification of  
A - Carbohydrates ✓  
E - Maltose/glucose ✓

- 2.7.2 Name of enzyme  
C - Lipase ✓

- 2.7.3 Feed components  
(a) Other organic component - Vitamin/Protein ✓  
(b) Inorganic component - Minerals ✓

(1)

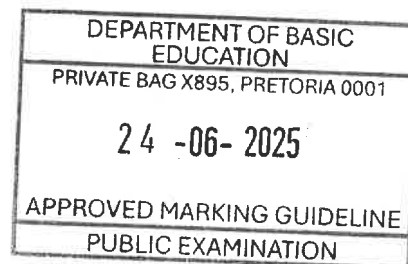
(1)

(1)

(1)

(1)

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QUESTION 3 : ANIMAL PRODUCTION, PROTECTION AND CONTROL

3.1 Production systems

3.1.1 Identification of the production systems

- (a) FARMER B - Intensive ✓ (1)
- (b) FARMER A - Extensive ✓ (1)

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3.1.2 **TWO reasons for intensive production system**

- Animals are provided with feed ✓
  - Many workers/9 workers ✓
  - High stock density/540 sheep on 30 ha ✓
  - More capital invested/feedlot/housing/2 feed sheds/2 boreholes ✓
- (Any 2) (2)

3.1.3 **TWO factors a farmer should consider to increase production**

- Nutrition/feeding ✓
  - Breeding/reproduction ✓
  - Environment/shelter ✓
  - Management ✓
- (Any 2) (2)

3.2 **Pigs housing facility**

3.2.1 **Identification of the letter**

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

3.3 **Handling of a chick**

3.3.1 **The reason for handling the chick**

Application of medication/vaccinating/immunising/inoculating ✓ (1)

3.3.2 **Name the tool used**

Syringe ✓ (1)

3.3.3 **TWO basic guidelines for handling poultry**

- Approach the birds in a quiet, easy moving manner that does not raise alarm/do not chase chickens around ✓
  - Carry them by both legs or wings ✓
  - Never carry them by head, one wing/leg ✓
  - Do not grab chickens by the feathers/tail ✓
- (Any 2) (2)

3.3.4 **TWO tools/equipment to restrain farm animals**

- Crush/head gate/neck clamp/chute/race ✓
  - Tilting/restraining table ✓
  - Rope ✓
  - Harness ✓
  - Halter ✓
  - Nose ring/nose pliers ✓
- (Any 2) (2)

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**3.4 Methods to administer medication**

- 3.4.1 Plunge dipping ✓ (1)
- 3.4.2 Dosing/drenching ✓ (1)
- 3.4.3 Vaginal insertion ✓ (1)
- 3.4.4 Topical administration ✓ (1)

**3.5 Animal diseases****3.5.1 Identification of the animal diseases**

- (a) Anthrax ✓ (1)
- (b) Foot & Mouth Disease (FMD) ✓ (1)
- (c) Coccidiosis ✓ (1)
- (d) Lumpy wool ✓ (1)

**3.5.2 Name of the pathogen**

- (a) 3.5.1(d) - Fungi/Dermatophilus congolensis/  
Pseudomonas aeruginosa ✓ (1)
- (b) 3.5.1(a) - Bacteria/Bacillus anthracis ✓ (1)

**3.6 The life cycle of parasite****3.6.1 Name of the parasite**

Liver fluke ✓ (1)

**3.6.2 Identification of the hosts**

- (a) Primary host - Cattle/sheep ✓ (1)
- (b) Secondary host - Snail ✓ (1)

**3.6.3 Measure to break the cycle of a parasite**

- Keep animals away from wet pastures ✓
  - Practice rotational grazing ✓
- (Any 1) (1)

**3.7 Parasites affecting farm animals****3.7.1 Classification of the parasites**

External/ecto parasites ✓ (1)

**3.7.2 Identification of  
PARASITE A - Blowfly ✓  
PARASITE C - Mite ✓**

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(1)  
(1)

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**3.7.3 ONE management practice to prevent the infestation of a blowfly**

- Clipping and cleaning of coat ✓
  - Timing the shearing and crutching of wool ✓
  - Tail docking ✓
  - Lambing should be after shearing ✓
  - Breeding of resistant animals ✓
  - Proper waste management/judicious blowfly control measures ✓
  - Keep the living areas of animals clean ✓
  - Treat/cover open wounds ✓
- (Any 1) (1)

**3.8 Urea poisoning**

**3.8.1 ONE symptom of urea poisoning**

- Bloating ✓
  - Tetany/painful muscular cramps ✓
  - Difficult/rapid breathing ✓
  - Excessive salivation ✓
  - Frequent defaecation ✓
  - Constipation ✓
  - Staggering ✓
  - Nervous symptoms ✓
- (Any 1) (1)

**3.8.2 Method to treat animals with urea poisoning**

- Removal of animals from the source of poisoning ✓
  - Administer vinegar/acetic acid to neutralise the ammonia (dilute one litre of vinegar with four litres of water using stomach tube) ✓
  - Administer large amounts of cold water to dilute the rumen content and slow the rate of urease activity ✓
- (Any 1) (1)

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**QUESTION 4: ANIMAL REPRODUCTION**

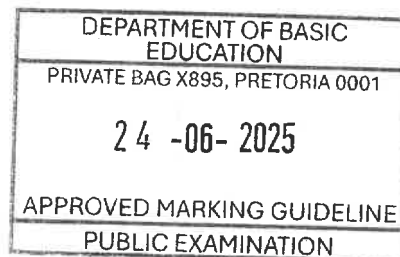
**4.1 The reproductive system of a male farm animal**

**4.1.1 Identification of**

- A** - Cowper's glands/bulbo-urethral glands ✓ (1)
- D** - Vas deferens/ sperm duct/ductus deferens/seminal tube ✓ (1)

**4.1.2 Letter of the part**

- (a) B ✓ (1)
- (b) E ✓ (1)
- (c) C ✓ (1)
- (d) F ✓ (1)
- (e) G ✓ (1)



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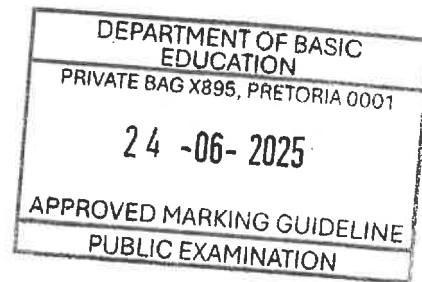
- 4.1.3 **TWO factors causing sterility in bulls**
- Deformed reproductive organs ✓
  - Diseases ✓
  - Congenital defects (hypoplasia/cryptorchidism/hermaphroditism) ✓
  - Genetic defects ✓
  - Azoospermia ✓
- (Any 2) (2)

4.2 **Gametogenesis in a farm animal**

- 4.2.1 **Identification of the type of gametogenesis**  
Oogenesis/ovigenesis ✓ (1)

- 4.2.2 **Labelling**
- B - Primary oocyte ✓ (1)
  - E - Ovum/egg cell ✓ (1)

- 4.2.3 **Types of cell division**
- (a) A - Mitosis ✓ (1)
  - (b) D - II Meiotic division ✓ (1)



4.3 **Oestrus synchronization**

- 4.3.1 **Identification of the reproductive technique**  
Synchronisation of oestrus ✓ (1)

- 4.3.2 **TWO disadvantages of synchronisation of oestrus**
- Requires high levels of technology ✓
  - Conditions such as poor nutrition and poor health may affect oestrus synchronisation negatively ✓
  - High labour costs during heat detection/high costs for good facilities/expensive ✓
  - Time intensive ✓
- (Any 2) (2)

4.4 **Artificial insemination**

- 4.4.1 **Identification of the reproductive technique**  
Artificial Insemination/AI ✓ (1)

- 4.4.2 **TWO advantages of artificial insemination**
- Reduces sexually transmitted diseases ✓
  - Cost effective/cheaper than maintaining bulls/no need to buy expensive bulls ✓
  - Semen of one bull can be used to inseminate many cows ✓
  - Rapid method to improve the quality of the herd ✓
  - Imported semen can be used ✓
  - Valuable tool in assisting with progeny testing/improves the genetic value of the herd ✓
  - Higher conception rate than with natural mating ✓
  - Can be applied where mating is impossible ✓
  - Can be used long after the death of the bull ✓
- (Any 2) (2)

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4.4.3 **ONE basic requirement for semen collection**

- Hygienic conditions/sterile equipment ✓
- Semen collection point should be closer to laboratory ✓
- Male animal should be healthy and clean ✓
- Collection vial must be warmed ✓
- Equipment must be readily available ✓
- The floor should not be slippery ✓
- Presence of a teaser animal ✓
- Experienced/skilled personnel ✓

(Any 1) (1)

4.4.4 **ONE characteristic of a good quality semen**

- It must be viable/less than 15% dead sperm cells ✓
- Semen should be milky/opaque in colour ✓
- Sticky with a characteristic smell ✓
- No blood in the semen ✓
- Sperm cells should have normal morphology/not deformed ✓
- High concentration semen ✓
- High mobility of sperm cells ✓
- Correct pH between 6,4 to 6,9 ✓

(Any 1) (1)

4.5 **Cloning**

4.5.1 **Type of cloning**

Therapeutic ✓

(1)

4.5.2 **Purpose of therapeutic cloning**

Produce embryonic stem cells that can be used for cell therapy/  
develop new animal treatments ✓

(1)

4.5.3 **Name of a process**

Enucleation ✓

(1)

4.5.4 **Reason for enucleation**

To prevent the genetic material of an egg cell from interfering with the  
process ✓

(1)

4.6 **The stage of parturition**

4.6.1 **Stage of parturition**

Ejection/expulsion of the foetus ✓

(1)

4.6.2 **Stage following ejection of foetus**

Ejection/expulsion of placenta ✓

(1)

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4.6.3 **ONE factor causing placenta retention**

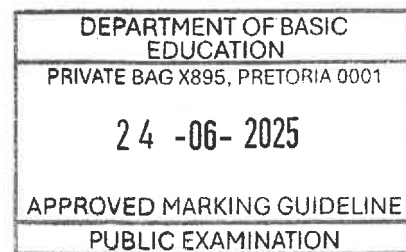
- Deficiency of vitamin A ✓
- Diseases/infections in the reproductive tract ✓
- Exhaustion ✓
- Mineral deficiencies ✓
- Hereditary defects ✓
- Over-conditioning of cows ✓
- Inertia of the uterus ✓
- Metabolic disorders ✓
- Failure of the foetal membranes and maternal tissues to break after parturition ✓
- Use of hormones to induce parturition ✓
- Dystocia/prolonged labour ✓
- Hormonal imbalances ✓
- Multiple births/twinning ✓

(Any 1) (1)

4.6.4 **ONE calf related conditions**

- High birth weight ✓
- Malformed foetus/deformities ✓
- Deviation of the head ✓
- Flexion of the elbow ✓
- Retention of one or both forelegs ✓
- Hydrocephalus ✓
- Hydrops Fetalis ✓
- Posterior presentation ✓
- Multiple births/twinning ✓
- Death of the foetus ✓

(Any 1) (1)



4.7 **Milk production**

4.7.1 **Indication of**

- (a) **A to C** - Lactation/milk production curve ✓ (1)
- (b) **B** - Peak period ✓ (1)

4.7.2 **Duration of lactation in days**

305 - 310 days ✓ (1)

4.7.3 **Explanation of the relationship between milk production and butterfat content in week 8**

When the milk production is at its peak ✓ the butterfat content is at its lowest level ✓

(2)  
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**TOTAL SECTION B: 105**  
**GRAND TOTAL: 150**

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