



Province of the  
**EASTERN CAPE**  
EDUCATION



# **NATIONAL SENIOR CERTIFICATE**

**GRADE 12**

**JUNE 2024**

## **AGRICULTURAL SCIENCES MARKING GUIDELINE**

**MARKS: 150**

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This marking guideline consist of 11 pages.

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

1.1	1.1.1	B ✓✓		
	1.1.2	C ✓✓		
	1.1.3	A ✓✓		
	1.1.4	A ✓✓		
	1.1.5	D ✓✓		
	1.1.6	C ✓✓		
	1.1.7	B ✓✓		
	1.1.8	A ✓✓		
	1.1.9	D ✓✓		
	1.1.10	D ✓✓	(10 x 2)	(20)
1.2	1.2.1	A Only ✓✓		
	1.2.2	Both A and B ✓✓		
	1.2.3	None ✓✓		
	1.2.4	Both A and B ✓✓		
	1.2.5	B Only ✓✓	(5 x 2)	(10)
1.3	1.3.1	Silage ✓✓		
	1.3.2	Feedlot ✓✓		
	1.3.3	Courtship ✓✓		
	1.3.4	Superovulation ✓✓		
	1.3.5	Fertilisation ✓✓	(5 x 2)	(10)
1.4	1.4.1	Oesophageal groove ✓		
	1.4.2	Infectious/contagious ✓		
	1.4.3	Oogenesis ✓		
	1.4.4	monozygotic ✓		
	1.4.5	Mummification ✓	(5 x 1)	(5)

**TOTAL SECTION A: 45**

**SECTION B****QUESTION 2: AGRICULTURAL MANAGEMENT AND MARKETING**

- 2.1 2.1.1 **Identification of farm animal**  
Cattle/sheep/goat ✓ (1)
- 2.1.2 **Name of stomach compartment**  
**A** – Rumen ✓  
**C** – Omasum ✓ (2)
- 2.1.3 **Adaptation visible on stomach compartment A**  
Papillae ✓ (1)
- 2.1.4 **Role of digestion in cellulose digestion**  
It acts as a heating rod ✓ creating ideal temperatures for rumen microbes ✓ (2)
- 2.1.5 **Deduce with a reason the stomach compartment in which the plastic bag will be found**  
Reticulum ✓, since the plastic bag won't be able to pass through the omasum which allows only fine particles to pass through. ✓ (2)
- 2.2 2.2.1 **Identification of vitamin or mineral**  
(a) Iodine ✓ (1)  
(b) Vitamin D ✓ (1)  
(c) Zinc ✓ (1)
- 2.2.2 **Identification of vitamin less likely to be deficient in ruminants**  
Vitamin B ✓ (1)
- 2.2.3 **Motivation of answer to QUESTION 2.2.2**  
Ruminants have rumen microbes ✓ which manufacture vitamin B ✓ (2)
- 2.3 2.3.1 **Calculation of the co-efficient of digestibility**  
Dry matter intake = (100% – 12%) of 1,5 kg  
= 88% of 1,5 kg  
= 1,32 kg ✓  
  
Dry matter excreted = (100% – 30%) of 0,5 kg  
= 70% of 0,5 kg  
= 0,35 kg ✓  
  
Coefficient of digestibility =  $\frac{\text{Dry matter intake} - \text{Dry matter excreted}}{\text{Dry matter intake}} \times 100$  ✓  
  
=  $\frac{1,32 \text{ kg} - 0,35 \text{ kg}}{1,32 \text{ kg}} \times 100$  ✓  
  
= 73,5 ✓ % ✓ (6)



- 2.6      2.6.1    **Identification of plan**  
Fodder flow plan ✓ (1)
- 2.6.2    **TWO reasons why the plan mentioned in QUESTION 2.6.1 is essential for optimum animal production**
- Cost effectiveness ✓
  - Safe use of natural resources ✓
  - Fully meet the animals requirements ✓
- (Any 2 x 1) (2)
- [35]**

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

#### 3.1 3.1.1 Identification of production system

Intensive production ✓

(1)

#### 3.1.2 Motivation to answer in QUESTION 3.1.1

- High stocking density ✓
- Provision of shelter ✓
- Provision of food ✓

(Any 2 x 1) (2)

#### 3.1.3 Assessment of whether the production system above can be implemented by resource poor farmers.

No, ✓ it is capital intensive. ✓

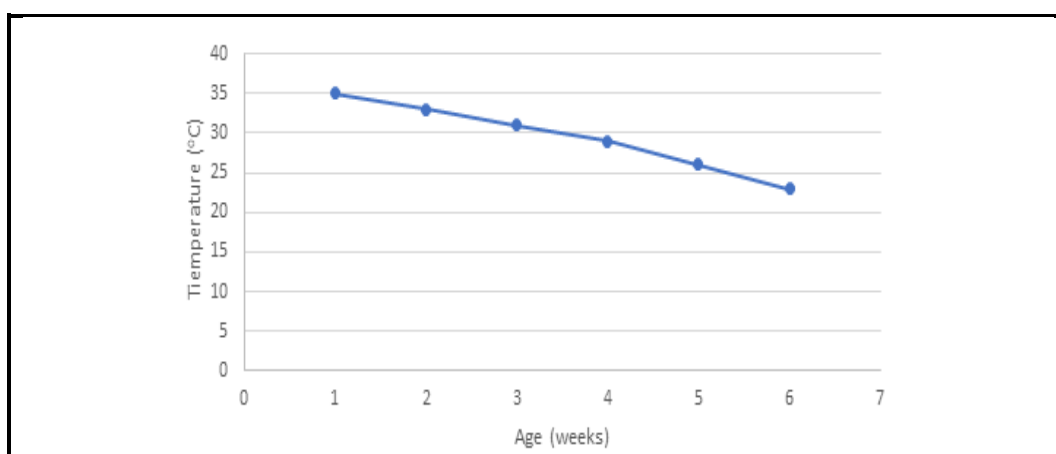
(2)

#### 3.1.4 Identification of TWO factors that can result in improved production.

- Nutrition ✓
- Environment ✓

(2)

#### 3.2 3.2.1 Recommended temperature for chicks of different ages



#### Criteria for marking

- Correct heading ✓
- x-axis correctly calibrated with label (Age) ✓
- y-axis correctly calibrated with label (Temperature) ✓
- Graph type (Line graph) ✓
- Correct units (°C and weeks) ✓
- Accuracy ✓

(6)

#### 3.2.2 Deduction of trend

As chicks grow, ✓ they can survive on lower temperatures. ✓

(2)

#### 3.2.3 Equipment that can be used by farmers to regulate temperature

- Fans ✓
- Heaters ✓
- Ventilators ✓

(Any 2 x 1) (2)

- 3.3     3.3.1     **Identification of parasite**  
Nasal worm ✓ (1)
- 3.3.2     **Classification of parasite**  
Ecto-parasite ✓ (1)
- 3.3.3     **ONE symptom of nasal worm infestation**  
• Sneezing ✓  
• Thick, yellow nasal discharge ✓  
• Shaking of head in an attempt to get rid of the parasite ✓  
(Any 1 x 1) (1)
- 3.3.4     **THREE financial implications of infestation by the parasite above**  
• Cost of remedies ✓  
• Loss of production ✓  
• Loss of income ✓  
• Poor quality meat and wool ✓ (Any 3 x 1) (3)
- 3.3.5     **Chemical control of nasal worm**  
Dosing ✓ (1)
- 3.4     **Disease that matches with the statement:**
- 3.4.1     Rabies ✓ (1)
- 3.4.2     Red water ✓ (1)
- 3.4.3     Mastitis ✓ (1)
- 3.4.4     Lumpy wool ✓ (1)

- 3.5 3.5.1 **Identification of poisonous plant**  
Thorny apple ✓ (1)
- 3.5.2 **Treatment strategy to deal with an animal that has consumed thorny apple**  
Administering charcoal ✓ to absorb the poison ✓ (2)
- 3.5.3 **TWO measures to prevent plant poisoning of animals**  
• Areas containing toxic plants must be camped off ✓  
• Avoid overgrazing ✓  
• Eradicate poisonous plants ✓  
• Do not feed animals mouldy hay ✓ (Any 2 x 1) (2)
- 3.5.4 **TWO roles of the state in animal protection**  
• Legislation ✓  
• Quarantine services ✓  
• Notifiable diseases ✓  
• Imports bans ✓  
• Veterinary services ✓  
• Research ✓ (Any 2 x 1) (2)
- [35]



**QUESTION 4: ANIMAL REPRODUCTION**

- 4.1 4.1.1 **Identification of parts A, B and D**  
A – Vulva ✓  
B – Vagina ✓  
D – Uterus ✓ (3)
- 4.1.2 **Identification of the parts associated with each of the statements**  
(a) H ✓ (1)  
(b) B ✓ (1)  
(c) F ✓ (1)
- 4.1.3 **TWO functions of part C**  
• Acts as a reservoir for semen ✓  
• Isolates the uterus from the external environment ✓  
• Facilitates sperm transfer into the uterus ✓  
• It secretes a thick mucus which acts as a barrier during pregnancy ✓ (Any 2 x 1) (2)
- 4.2 4.2.1 **Explanation of why artificial insemination is considered cheap**  
No need to buy bulls ✓ (1)
- 4.2.2 **TWO pieces of equipment that are key in artificial insemination**  
• Artificial vagina ✓  
• Electro ejaculator ✓  
• Pistolette ✓ (Any 2 x 1) (2)
- 4.2.3 **Definition of underlined phrase.**  
Manipulation of the female's oestrus cycle ✓ so they can breed at about the same time. ✓ (2)
- 4.2.4 **TWO hormones that can be used to synchronise oestrus**  
• Melengestrol acetate ✓  
• Prostaglandin ✓  
• Synthetic progesterone (progestin) ✓  
• Oestradiol ✓ (Any 2 x 1) (2)

- 4.3 4.3.1 **Presentation shown in the diagram**  
Posterior presentation ✓ (1)
- 4.3.2 **Identification of parturition stage**  
Expulsion of the foetus ✓ (1)
- 4.3.3 **TWO other causes of dystocia**  
  - Multiple births ✓
  - Premature or late birth ✓
  - Incorrect presentation of the calf ✓
  - Incomplete cervical dilation ✓
  - Hydrocephalus ✓(Any 2 x 1) (2)
- 4.3.4 **TWO signs of a cow approaching parturition**  
  - Isolating herself from other animals ✓
  - Nesting behaviour ✓
  - Restlessness ✓
  - Signs discomfort ✓
  - Attempts to urinate often ✓
  - Milk leaks from the teats ✓(Any 2 x 1) (2)
- 4.4 4.4.1 **Identification of hormones X and Y**  
X – Oestrogen ✓  
Y – Luteinising hormone ✓ (2)
- 4.4.2 **Letter showing oestrus stage**  
C ✓ (1)
- 4.4.3 **TWO reasons to support the answer to QUESTION 4.4.2**  
  - Oestrogen is at its peak ✓
  - It is the shortest stage of the oestrus cycle ✓
  - Coincides with ovulation ✓(Any 2 x 1) (2)
- 4.4.4 **TWO aids that can help to detect oestrus**  
  - Pedometer ✓
  - Tail-chalking ✓
  - Androgenised females ✓
  - Heat watch system ✓
  - Chin-ball markers ✓(Any 2 x 1) (2)

4.5	4.5.1	<b>Identification of technique</b> Cloning / Nuclear transfer ✓	(1)
	4.5.2	<b>Sheep that is identical to offspring C</b> A ✓	(1)
	4.5.3	<b>Name of process D</b> Enucleation ✓	(1)
	4.5.4	<b>Main purpose of technique</b> To make an exact copy of a living organism ✓	(1)
	4.5.5	<b>THREE disadvantages of reproductive technique</b> <ul style="list-style-type: none"><li>• It is expensive ✓</li><li>• Dystocia problems can arise because clones can be very large at birth ✓</li><li>• Cloned animals seem to age prematurely ✓</li><li>• It is a fairly new and developing technology that requires specific skills ✓</li></ul>	(3)
			<b>[35]</b>
<b>TOTAL SECTION B:</b>			<b>105</b>
<b>GRAND TOTAL:</b>			<b>150</b>