

SA's Leading Past Year

Exam Paper Portal



You have Downloaded, yet Another Great Resource to assist you with your Studies 😊

Thank You for Supporting SA Exam Papers

Your Leading Past Year Exam Paper Resource Portal

Visit us @ www.saexampapers.co.za





Province of the
EASTERN CAPE
EDUCATION



NATIONAL SENIOR CERTIFICATE

GRADE 12

JUNE 2024

AGRICULTURAL SCIENCES MARKING GUIDELINE

MARKS: 150

This marking guideline consist of 11 pages.



**SA EXAM
PAPERS**

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)

2.3.2 **TWO factors that could have influenced the digestibility of the feed in the trial.**

- Type of animal ✓
- Quantity of feed taken in ✓
- Feed composition ✓
- Ration composition ✓
- Preparation of feed ✓
- Individuality ✓
- Age of plant

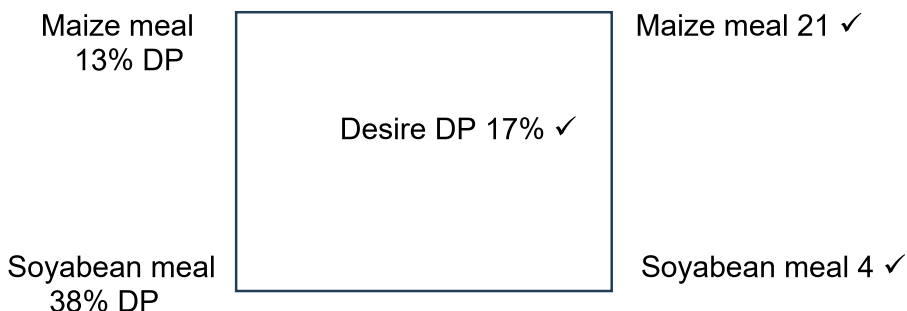
(Any 2 x 1) (2)

2.3.3 **TWO methods a farmer can use to improve the digestibility of the feed above.**

- Grinding ✓
- Pelleting ✓
- Boiling ✓
- Roasting ✓
- Crushing / rolling ✓

(Any 2 x 1) (2)

2.4 2.4.1 **Pearson Square to determine the ratio at which the two feeds must be mixed**



Ratio of Maize meal : Soyabean meal
21 : 4 ✓ (4)

2.5 2.5.1 **Comparison of the biological values of feeds of plant and animal origin**

Feeds of animal origin have higher biological values ✓ than those of plant origin ✓ (2)

2.5.2 **Importance of feeding non-ruminants with feeds of higher biological value**

Non ruminants do not have rumen microbes ✓ which can convert proteins of lower BV to higher BV ✓ (2)

- 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.

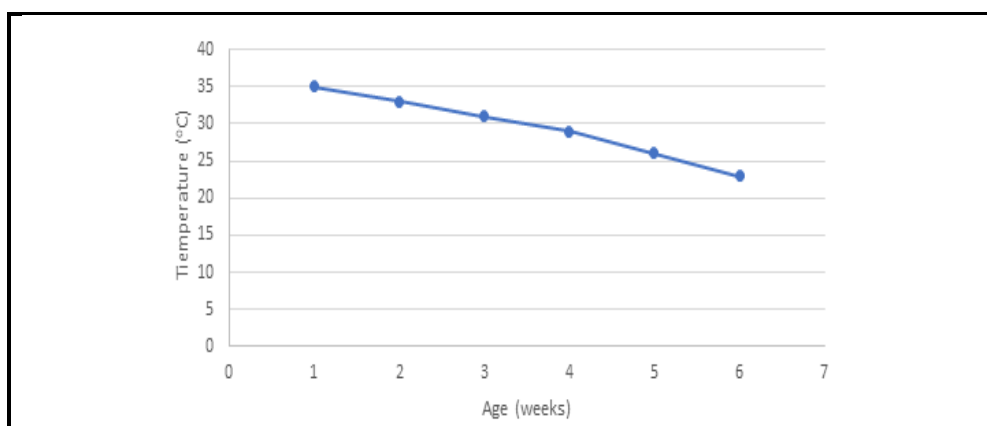
No, ✓ it is capital intensive. ✓

(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)

- 
- SA EXAM
PAPERS

- 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 **Identification of technique**
Cloning / Nuclear transfer ✓ (1)
- 4.5.2 **Sheep that is identical to offspring C**
A ✓ (1)
- 4.5.3 **Name of process D**
Enucleation ✓ (1)
- 4.5.4 **Main purpose of technique**
To make an exact copy of a living organism ✓ (1)
- 4.5.5 **THREE disadvantages of reproductive technique**
- It is expensive ✓
 - Dystocia problems can arise because clones can be very large at birth ✓
 - Cloned animals seem to age prematurely ✓
 - It is a fairly new and developing technology that requires specific skills ✓
- (Any 3 x 1) (3)
[35]

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