



Province of the
EASTERN CAPE
EDUCATION

**NATIONAL
SENIOR CERTIFICATE**

GRADE 12

SEPTEMBER 2014

**AGRICULTURAL SCIENCES P1
MEMORANDUM**

MARKS: 150

This memorandum consists of 9 pages.

SECTION A**QUESTION 1**

- | | | | | |
|-----|--------|---|----------|------|
| 1.1 | 1.1.1 | B ✓✓ | | |
| | 1.1.2 | A ✓✓ | | |
| | 1.1.3 | D ✓✓ | | |
| | 1.1.4 | C ✓✓ | | |
| | 1.1.5 | D ✓✓ | | |
| | 1.1.6 | B ✓✓ | | |
| | 1.1.7 | D ✓✓ | | |
| | 1.1.8 | B ✓✓ | | |
| | 1.1.9 | C ✓✓ | | |
| | 1.1.10 | C ✓✓ | (10 x 2) | (20) |
| 1.2 | 1.2.1 | B only ✓✓ | | |
| | 1.2.2 | Both A and B ✓✓ | | |
| | 1.2.3 | A only ✓✓ | | |
| | 1.2.4 | A only ✓✓ | | |
| | 1.2.5 | None ✓✓ | (5 x 2) | (10) |
| 1.3 | 1.3.1 | Creep feed ✓✓ | | |
| | 1.3.2 | Feed conversion ratio ✓✓ | | |
| | 1.3.3 | Crouching ✓✓ | | |
| | 1.3.4 | Deep-litter system ✓✓ | | |
| | 1.3.5 | Therapeutic cloning ✓✓ | (5 x 2) | (10) |
| 1.4 | 1.4.1 | Fodder flow programme/Feed flow programme ✓ | | |
| | 1.4.2 | Flight zone ✓ | | |
| | 1.4.3 | Progesterone ✓ | | |
| | 1.4.4 | Prostate ✓ | | |
| | 1.4.5 | Ovigenesis/oogenesis ✓ | (5 x 1) | (5) |

TOTAL SECTION A: 45

SECTION B**QUESTION 2: ANIMAL NUTRITION****2.1 Alimentary canals of different animals****2.1.1 Letter representing labelled parts**

- (a) B ✓ (1)
 (b) B ✓ (1)
 (c) E ✓ in animal 1 and C ✓ in animal 2 (2)

2.1.2 One adaptation of part B and of part D

- Part B has finger-like projections known as papillae which act as a heating rod ✓
- Presence of rumen micro-organisms which digest food ✓ (Any 1) **and**
- Part D has thick muscles ✓
- Presence of small stones which assist in grinding ✓ (Any 1) (2)

2.2 2.2.1 Digestible co-efficiency of hay

$$\text{DM intake} = \frac{240 \text{ kg} \times 10\%}{100\%} = 24 \text{ kg}$$

$$\text{DM excreted} = \frac{240 \text{ kg} - 24 \text{ kg}}{14 \text{ kg} \times 60\%} = 216 \text{ kg} \checkmark$$

$$= \frac{14 \text{ kg} \times 60\%}{100\%} = 8,4 \text{ kg}$$

$$\text{DC} = \frac{14 \text{ kg} - 8,4 \text{ kg}}{\text{DM intake (kg)} - \text{DM of manure (kg)}} \times 100 \checkmark$$

$$= \frac{216 \text{ kg} - 5,6 \text{ kg}}{216 \text{ kg}} \times 100 \checkmark \quad \text{OR} \quad \frac{210,4 \text{ kg}}{216 \text{ kg}} \times 100 \checkmark$$

$$= 97,4 \checkmark \% \checkmark \quad (6)$$

2.2.2 Stage at which hay was cut

The hay was cut when it was young ✓✓ (1)

2.2.3 Reason

- 97% of the feed ✓
- was digested and absorbed ✓ (2)

2.2.4 Feed components in the table

- | | | |
|-----|-------------------------|-----|
| (a) | Ash ✓ | (1) |
| (b) | Ether extract ✓ | (1) |
| (c) | Crude protein ✓ | (1) |
| (d) | Nitrogen-free extract ✓ | (1) |

2.3 Mineral deficient and disease caused

- | | | | |
|-------|---|--------|-----|
| 2.3.1 | A | Iron ✓ | (1) |
| | B | Zinc ✓ | (1) |

- | | | | |
|-------|---|------------------------------------|-----|
| 2.3.2 | A | Anaemia ✓ | (1) |
| | B | Parakeratosis ✓ / Keratinisation ✓ | (1) |

2.3.3 Cause of condition in A

Pigs are kept on cement floor without any access to soil ✓ (1)

2.3.4 Indigenous way to treat condition in A

Placing red soil sods on the pigs' cement floor ✓ (1)

2.4 Method of mineral supplementation

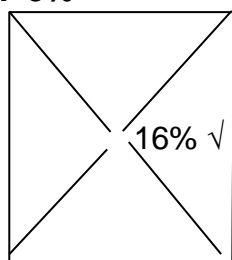
2.4.1 Cafeteria-style mineral provision/free choice ✓ (1)

2.4.2 Injection ✓ (1)

2.4.3 Supplementing ration ✓ (1)

2.5 Balancing rations

Feed A (Maize): 8% 20 ✓



Feed B (POC): 36% 8 ✓

Mix 20 parts of feed A with 8 parts of feed B or 20 : 8 ✓ (4)

2.6 FCR calculation

$$\begin{aligned}
 \text{FCR} &= \frac{\text{Feed consumption}}{\text{Body weight gain}} \checkmark \\
 &= \frac{4,8 \text{ kg}}{1,4 \text{ kg}} \checkmark \\
 &= 3,43 \checkmark
 \end{aligned}$$

(3)
[35]

QUESTION 3: ANIMAL PRODUCTION, PROTECTION AND CONTROL**3.1 Production systems**

- 3.1.1 Farmer B ✓ (1)
- 3.1.2
- Broilers are densely populated ✓
 - Too much heat/roof orientation faces northerly direction/steel container is a poor insulator ✓
 - Poor ventilation ✓ (3)
- 3.1.3 (a) Insulation ✓ (1)
- (b) East-west direction ✓ (1)

3.2 Farming systems

- 3.2.1 A Commercial farming/Intensive ✓
- B Subsistence farming/Extensive ✓ (2)

3.2.2 Differences between subsistence and commercial farming

Subsistence farming	Commercial farming
Produces only to feed themselves ✓	Produces to sell ✓
Less production ✓	High production ✓
Traditional milking technique/milking with hands ✓	Modern technique used/milking with machine ✓
Small-scale production ✓	Large-scale production ✓
Local multi-purpose breeds used ✓	High performing quality breeds used. ✓

(Any 3 x 2) (6)

3.3 Techniques to handle farm animals

- 3.3.1 Hobbling ✓ (1)
- 3.3.2 Blocking vision ✓ (1)
- 3.3.3 Immobilising/Prodding ✓ (1)

3.4 Parasites affecting animals

- 3.4.1 Internal parasites/endoparasites ✓ (1)
- 3.4.2 **Names of parasites A , B and C**
- A Tapeworm ✓ (1)
- B Liver fluke ✓ (1)
- C Roundworm ✓ (1)
- 3.4.3 **Parasite that needs TWO hosts**
- Tapeworm ✓
- Liver fluke ✓ (Any 1 x 1) (1)

3.4.4 **Environmental condition influencing infestation of animals**
Wet conditions ✓ (1)

3.4.5 **TWO biological control measures of internal parasites**
• Dung beetles can remove manure from pastures ✓
• Introduction of natural enemies ✓
• Micro fungi ✓ (Any 2 x 1) (2)

3.5 Plant poison

3.5.1 **TWO poisonous plants**
• Thorn apple ✓
• Poisonous bulb ✓
• Maize fungus ✓ (Any 2 x 1) (2)

3.5.2 **THREE symptoms of thorn apple poison**
• Reduced feed intake ✓
• Retarded growth ✓
• Reduced gastrointestinal motility and secretory activity ✓
• Extreme mouth dryness ✓
• Pupil dilation and muscle tremors ✓ (Any 3 x 1) (3)

3.5.3 **Characteristic of thorn apple**
• Bad smell ✓
• Bad taste ✓
• Thorny spiny fruit ✓ (Any 1 x 1) (1)

3.6 **FOUR economic implications of animal diseases**
• Decreased production (milk, wool, meat, eggs etc.) ✓
• Reduced quality of carcasses, milk and skin. ✓
• Loss of income. ✓
• Abortion of pregnant animals. ✓
• Cost of controlling, preventing and treating animals is high. ✓
• Banning of exports of animals and their products. ✓ (Any 4 x 1) (4)

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QUESTION 4: ANIMAL REPRODUCTION**4.1 Letter and name of labelled parts**

- 4.1.1 A ✓ Testis ✓ (2)
- 4.1.2 B ✓ Epididymis ✓ (2)
- 4.1.3 D ✓ Vas deference ✓ (2)

4.2 Congenital defects in a bull**4.2.1 TWO congenital defects in part labelled A**

- Cryptorchidism ✓
- Hypoplasia ✓ (2)

4.2.2 Effect of congenital defects

Cryptorchidism

- Testis stay to the body cavity ✓
- No testis in the scrotum where sperms are moving from ✓

Hypoplasia

- Testis are underdeveloped ✓
- Fewer sperm production/low sperm count ✓ (4)

4.3 Cloning

- 4.3.1 Reproductive cloning ✓ (1)

4.3.2 Reason

- So that the cloned lamb is identical to the donor sheep (sheep A.) ✓
- OR

- So that the genetic characteristics of sheep B are not part of the cloned lamb. ✓ (2)

- 4.3.3 An electrical shock ✓ is used to fuse the two cells at point D. ✓ (2)

- 4.3.4 Sheep A ✓ (1)

4.3.5 Reason

- Because the donor sheep (A) nucleus (carrier of genetic make-up) was fused with an egg cell without the nucleus ✓
- therefore only trait of sheep A will be represented in the cloned lamb ✓ (2)

4.4 Process involved in a dairy cow

4.4.1 Milk letdown process/Milk ejection process ✓ (1)

4.4.2 **TWO stimuli visible in the illustration**

- Sound of a milking machine ✓
- Sight of a calf ✓
- Touch of the udder's skin ✓ (Any 2 x 1) (2)

4.4.3 Oxytocin ✓ (1)

4.5 Difficult parturition

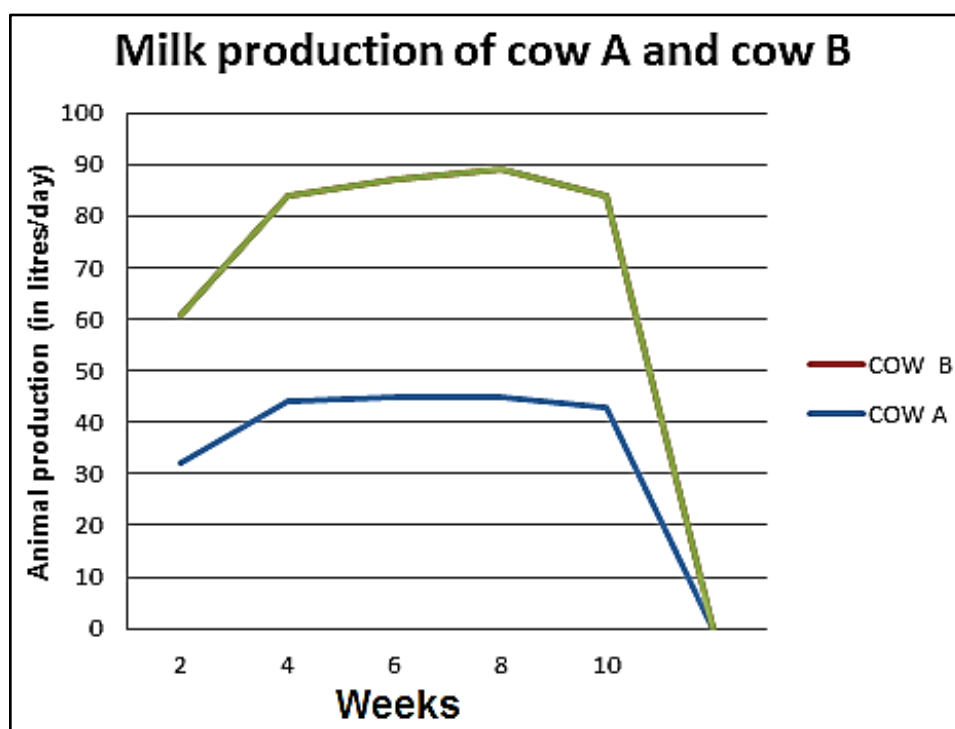
4.5.1 Dystocia ✓ (1)

4.5.2 **TWO factors causing dystocia**

- Incorrect presentation, position and posture ✓
- Large foetus which cannot move through birth canal ✓
- Torsion of the uterus ✓
- Malformed foetus ✓ (Any 2 x 1) (2)

4.6 Milk production of cow A and cow B

4.6.1 Line graph on milk production of cow A and cow B



Marking graph with the following checklist

Criteria	Yes
1. Line graph	✓
2. X-axis labelled	✓
3. Y-axis labelled	✓
4. Points plotted correctly	✓
5. Correct heading	✓
6. Units indicated on y axis	✓ (Any 5)

(5)

4.6.2 **Cow with mastitis**

Cow A ✓

(1)

4.6.3 **Reason**

Sudden drop in milk production at week 12. ✓

(2)

[35]

TOTAL SECTION B: 105

GRAND TOTAL: 150