



# education

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Department:  
Education  
**REPUBLIC OF SOUTH AFRICA**

**NATIONAL  
SENIOR CERTIFICATE**

**GRADE 12**

**AGRICULTURAL SCIENCES P2**

**MEMORANDUM**

**NOVEMBER 2008**

**MARKS: 150**

**This memorandum consists of 11 pages.**

**SECTION A****QUESTION 1.1**

|        |            |            |          |            |
|--------|------------|------------|----------|------------|
| 1.1.1  | <b>A</b>   | <b>B</b>   | <b>C</b> | <b>X//</b> |
| 1.1.2  | <b>A</b>   | <b>B</b>   | <b>C</b> | <b>X//</b> |
| 1.1.3  | <b>A</b>   | <b>X//</b> | <b>C</b> | <b>D</b>   |
| 1.1.4  | <b>A</b>   | <b>X//</b> | <b>C</b> | <b>D</b>   |
| 1.1.5  | <b>A</b>   | <b>X//</b> | <b>C</b> | <b>D</b>   |
| 1.1.6  | <b>A</b>   | <b>X//</b> | <b>C</b> | <b>D</b>   |
| 1.1.7  | <b>A</b>   | <b>X//</b> | <b>C</b> | <b>D</b>   |
| 1.1.8  | <b>A</b>   | <b>B</b>   | <b>C</b> | <b>X//</b> |
| 1.1.9  | <b>A</b>   | <b>X//</b> | <b>C</b> | <b>D</b>   |
| 1.1.10 | <b>X//</b> | <b>B</b>   | <b>C</b> | <b>D</b>   |

(10 x 2)(20)

**QUESTION 1.2**

|       |            |
|-------|------------|
| 1.2.1 | <b>H//</b> |
| 1.2.2 | <b>F//</b> |
| 1.2.3 | <b>L//</b> |
| 1.2.4 | <b>E//</b> |
| 1.2.5 | <b>G//</b> |

(5 x 2) (10)

**QUESTION 1.3**

1.3.1 solubility //

1.3.2 75%/seventy five percent//1.3.3 grading/classification //1.3.4 diversification//1.3.5 maltose/malt sugar//

(5 x 2) (10)

Take note:

1.3.1 solubility in fat/water //

**QUESTION 1.4**1.4.1 chemical /1.4.2 rumen / reticulum / reticulo-rumenlarge stomach/netstomach/honeycomb stomach/1.4.3 fluctuation/elasticity /1.4.4 seasonal/temporary /1.4.5 Iodine /

(5 x 1) (5)

**TOTAL SECTION A: 45**

**SECTION B****QUESTION 2****2.1 INTERNAL STRUCTURES OF A RUMINANT STOMACH**

- 2.1.1
- A – abomasums/true stomach/milk stomach ✓
  - B – omasum/leaf stomach ✓
  - C – reticulum/honeycomb stomach/net stomach/hardware stomach ✓
- (3)

2.1.2 (a) B ✓ (1)

(b) C ✓ (1)

(c) A ✓ (1)

[6]

**2.2 FODDER FLOW**

2.2.1  $\frac{60}{100} \times \frac{50\,676}{1} \checkmark = 30\,405,6 \text{ kg} / 30\,406 \text{ kg} \checkmark$  (2)

2.2.2  $37\,000 \text{ kg} \div 30\,405,6 \text{ kg} \checkmark = 1,22 \text{ cows} \checkmark$  (2)

- 2.2.3 **Roughage**
- contain a small percentage of digestible nutrients/TDN < 60% ✓
  - much crude fibre ✓
  - large/high volume per mass unit/bulky ✓ (any 1)
- Concentrates**
- contain a large percentage of digestible nutrients/TDN > 60% ✓
  - little crude fibre ✓
  - small/low volume per mass unit ✓ (any 1) (2)
- [6]

**2.3 NUTRITIVE RATIO**

2.3.1 **Feed type A:**  $81,9\% - 6,9\% = 75,0\% \checkmark$   
 $= 1 : \frac{75,0}{6,9} \checkmark$   
 $= 1 : 10,9 \checkmark / 1:11 \checkmark$  (any 2) (2)

**Feed type B:**  $78,0\% - 13,2\% = 64,8\% \checkmark$   
 $= 1 : \frac{64,8}{13,2} \checkmark$   
 $= 1 : 4,9 \checkmark / 1:5 \checkmark$  (any 2) (2)

- 2.3.2
- Feed type B ✓
  - High concentration of/much protein with high biological value is essential for growth/ratio is less than 1:6/ratio is narrow ✓
- (2)  
[6]

2.4 **BUSINESS PLAN**

2.4.1

| <b>Farm foreman</b>                                                                                                                                                                                        | <b>Farm worker</b>                                                                                                                                                              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• 50%/medium ability for insight to make sure the tasks is well implemented. ✓</li> </ul>                                                                           | <ul style="list-style-type: none"> <li>• 10-20%/Very low ability for insight, because farm manager and foreman are responsible. ✓</li> </ul>                                    |
| <ul style="list-style-type: none"> <li>• 50%/medium ability to work with people. He is responsible for optimum work conditions. ✓</li> </ul>                                                               | <ul style="list-style-type: none"> <li>• 50%/medium ability to work with people. Collaborates with other workers to get the work done. ✓</li> </ul>                             |
| <ul style="list-style-type: none"> <li>• 50%/medium ability to work with his hands. He must be able to show the workers how the work must be done and some of the work is his responsibility. ✓</li> </ul> | <ul style="list-style-type: none"> <li>• Must be 100%/high technically proficient, because the farm worker must be able to do all the physical labour on the farm. ✓</li> </ul> |

(6)

- 2.4.2 **Steps of planning:**
- estimations and predictions ✓
  - state aims/goals/objectives ✓
  - policy laid down ✓
  - programmes determine what should be done/plan of action ✓
  - schedules state when it should be done ✓
  - procedures state how an activity ought to be carried out ✓
  - rules require actions in a specific and defined way ✓
  - SWOT analysis ✓
  - budget express the plans ✓
  - control and evaluation ✓
- (any 4) (4)

- 2.4.3 Farm manager/entrepreneur/farm foreman/Agri-business person ✓
- (1)  
[11]

2.5 BREEDING PROGRAMME

2.5.1 Upgrading ✓ (1)

2.5.2 Advantages:

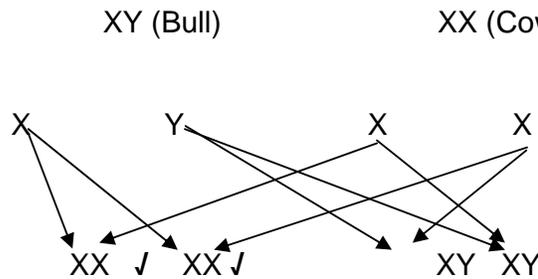
- an economic form of breeding, only a pure-bred male is bought/cheap form of breeding ✓
- rapid system of breeding ✓
- no specialised knowledge is required ✓
- poor recessive characteristics suppressed ✓ (any 1) (1)

2.5.3

|      |   |     |    |   |
|------|---|-----|----|---|
|      |   | Cow |    |   |
|      |   | X   | X  |   |
| Bull | X | XX  | XX | ✓ |
|      | Y | XY  | XY | ✓ |

or

Please note: This could also be in a alternative format



(2)

2.5.4  $F_1$  generation = 50%  
 $F_2$  generation =  $50\% + \frac{50\%}{2}$   
 = 75%  
 $F_3$  generation =  $75\% + \frac{25\%}{2}$   
 = 87,5%

3 generations ✓✓

(2)  
[35]

**QUESTION 3****3.1 AI (ARTIFICIAL INSEMINATION )**

- 3.1.1 High levels✓  
of oestrogen secreted ✓ (2)
- 3.1.2
- Responsible for the final preparation of uterine wall ✓✓
  - Increased blood supply to the uterus ✓✓
  - Relaxing of the muscles of the cervix ✓✓
  - Preventing bacterial infection ✓✓
  - Delay the secretion of FSH ✓✓
  - Responsible for heat signs ✓✓ (any 2) (2)
- 3.1.3 The afternoon/after 12 hours ✓ (1)
- 3.1.4 Ovulation /release of ripe ovum (egg)/bursting or rupturing of graafian follicle ✓✓ (2)  
[7]

**3.2 EXTERNAL PARASITES**

- 3.2.1 A – Tick ✓  
G – Flea ✓ (2)
- 3.2.2 (a) D ✓  
(b) A or H ✓ (2)
- 3.2.3 A or H ✓✓ (2)
- 3.2.4
- Spot treatment/spray method/systemic methods/veld fires/rotation grazing✓
  - Biological/using predators✓ (any 1) (1)  
[7]

**3.3 INDIGENOUS CATTLE**

- 3.3.1
- Utilise poor pastures ✓
  - Strong walkers ✓
  - Loose skin – radiating surface/dewlap ✓
  - Sleek hair/short hair ✓
  - Hump ✓
  - Long scrotum ✓
  - Longer bodies ✓ (any 2) (2)
- 3.3.2 Bonsmara/Drakenburger/Afrikaner/Pedi/Nguni ✓ (1)  
[3]

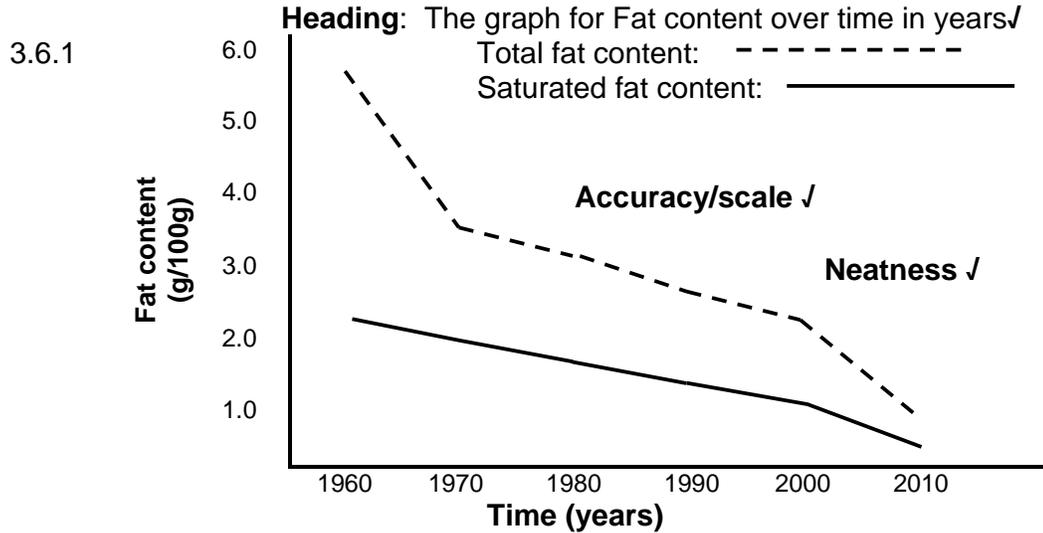
**3.4 HIV/Aids**

- 3.4.1
- productivity will decrease ✓
  - because experience and knowledge have been lost ✓
  - shortage of skilled labour ✓
  - loss of young productive labour force ✓ (any 2) (2)
- 3.4.2
- Establishment of HIV/AIDS support groups ✓
  - Media coverage of HIV/AIDS/awareness campaigns ✓
  - Abstinence from unprotected casual sexual activities ✓
  - Access to condoms ✓
  - Access to treatment for sexually-transmitted infection ✓
  - Access to anti-retroviral drugs ✓
  - Encourage religious practices (church) ✓ (any 4) (4)
- 3.4.3
- Labour Relations Act ✓
  - Basic Conditions of Employment Act ✓
  - Occupational Health and Safety Act ✓
  - Compensation for Occupational Injuries and Diseases Act ✓ (any 1) (1)
- [7]

**3.5 CAPITAL**

- 3.5.1
- Produced goods can be utilised for further production ✓
  - Production factor which is created by the economic process, i.e. by human endeavour/money or equipment accumulated by savings for production purposes ✓ (1)
- 3.5.2
- Land Bank ✓
  - Agricultural Credit Board ✓
  - Agricultural co-operatives ✓
  - Commercial banks ✓
  - Insurance companies ✓
  - Trust companies ✓ (any 2) (2)
- 3.5.3 Fixed capital/movable capital ✓ (1)
- [4]

3.6 RESEARCH



Both indicators ✓

Use the following simple rubric to mark this graph:

| Criteria              | 0 mark                                                     | 1 mark                                                |
|-----------------------|------------------------------------------------------------|-------------------------------------------------------|
| <b>Accuracy/scale</b> | No scale/<br>not correctly<br>plotted/<br>inaccurate lines | Proper scale/<br>correctly plotted/<br>accurate lines |
| <b>Headings</b>       | No heading                                                 | Correct headings                                      |
| <b>Indicators</b>     | No indicators                                              | Correct indicators for x- and<br>y-axis               |
| <b>Neatness</b>       | Very untidy/<br>no ruler used                              | Used ruler to draw straight<br>lines                  |

(4)

3.6.2 Drop/decrease/decline ✓

(1)

3.6.3 Health consciousness/Genetic modifications of animals ✓

(1)

3.6.4

- Consumer demands ✓
- Supplier is now aware of the eating/consumer behaviour or needs ✓ (any 1)

(1)

[7]

[35]

**QUESTION 4**

4.1 Handling of farm animals

- 4.1.1
- Breed B ✓ **and any 1 of the following:**
  - Fluctuation in milk production show that the animals were nervous during the milking process ✓
  - Annual milk production seems to be higher ✓ (2)

4.1.2 Breed A/B ✓ (1)

- 4.1.3
- young animals stressed and might die ✓
  - can cause serious injuries (stampede) ✓
  - loss of production (e.g. milk production) ✓
  - lower the grading of animal products ✓
  - delayed rigor mortis (tough meat) ✓
  - poor meat quality (meat which has been bruised) ✓ (any 4) (4)
- [7]

4.2

**Example:**

Owner : \_\_\_\_\_

Contact details: \_\_\_\_\_

Name of farm: \_\_\_\_\_

District : \_\_\_\_\_

Date : \_\_\_\_\_

Type/description of animals: \_\_\_\_\_

\_\_\_\_\_

Number of animals: \_\_\_\_\_

Transport detail: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

(Owner)

(Buyer)

**Use the following checklist to mark this question:**

| Item                          | Not visible<br>0 | Visible<br>1 |
|-------------------------------|------------------|--------------|
| Details of owner/farm         |                  |              |
| Date                          |                  |              |
| Description/Number of animals |                  |              |
| Signatures (owner/buyer)      |                  |              |

(4)  
[11]

#### 4.3 NUTRITION OF ANIMALS IN SUMMER RAINFALL AREA

- 4.3.1 Vitamin A ✓ **and any 1 of the following:**
- normal vision sharpness ✓
  - maintenance of the mucus layers ✓
  - normal reproduction ✓
- (2)
- 4.3.2
- Pastures are dry/brown in colour/seems dead✓✓
  - Carotene is the pro-vitamin of vitamin A, which is found in green plant parts/pastures are then deficient in carotene ✓✓
- (4)  
[6]

#### 4.4 CRITICAL AND SCARCE SKILLS IN THE AGRICULTURAL SECTOR (AgriSETA)

- 4.4.1
- Improve the productivity of their workers ✓
  - More proficient workforce ✓
  - Higher production outputs ✓
  - Funding from government is available ✓
  - Workers develop a sense of achievement/motivation improve ✓
- (any 3) (3)
- 4.4.2
- Higher income possibilities ✓
  - Improved living conditions ✓
  - Better career opportunities ✓
- (any 2) (2)
- 4.4.3
- Offer better salaries/income possibilities ✓✓
  - Train agricultural workforce ✓✓
  - Skilled, accountable labourers ✓✓
  - Remunerate over time by industry ✓✓
  - Better labour management in industry ✓✓
  - Better working conditions in industry might loose labours ✓✓
- (any 2) (2)  
[7]

#### 4.5 MARKETING OF BEEF

- 4.5.1 **Open-ended question/Answer depends on the reason**  
e.g. Auctions/ **and any 1 of the following**  
there are lots of capital and buyers together and/or ✓  
they are in competition to offer the highest prices ✓
- (2)
- 4.5.2 Local people who buy directly from the farm (security risk) ✓  
Criminals might use such opportunity to rob farmers ✓
- (2)  
[4]

**4.6 BELL-SHAPED CURVE FOR MILK PRODUCTION**

- 4.6.1
- Most (% of population) of the population produce at the average(number of population at the average value) ✓
  - Some (% of population) of the population produce above the average (number of population above average) ✓
  - Some (% of population) of the population are producing below the average (number of population below average) ✓ (3)
- 4.6.2
- The genes of the later generation improved with regard to milk production ✓✓ or
  - there was a response to selection in this herd ✓✓ (any 2) (2)
- 4.6.3
- The animals in the population that produce above the average/the animals that produce the most milk ✓✓ (2)

[7]

**[35]****TOTAL SECTION B: 105**