



# education

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Department:  
Education  
**REPUBLIC OF SOUTH AFRICA**

**NATIONAL  
SENIOR CERTIFICATE**

**GRADE 12**

**AGRICULTURAL SCIENCES P2**

**FEBRUARY/MARCH 2010**

**MEMORANDUM**

**MARKS: 150**

**This memorandum consists of 9 pages.**

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

1.1.1	A	B	X✓✓	D
1.1.2	A	X✓✓	C	D
1.1.3	X✓✓	B	C	D
1.1.4	X✓✓	B	C	D
1.1.5	A	X✓✓	C	D
1.1.6	A	B	X✓✓	D
1.1.7	X✓✓	B	C	D
1.1.8	X✓✓	B	C	D
1.1.9	A	X✓✓	C	D
1.1.10	A	B	X✓✓	D

(10 x 2) (20)

**QUESTION 1.2**

1.2.1	E✓✓
1.2.2	B✓✓
1.2.3	C✓✓
1.2.4	A✓✓
1.2.5	D✓✓

(5 x 2) (10)

**QUESTION 1.3**

- 1.3.1 Entrepreneurs ✓✓  
 1.3.2 Restitution/land restitution ✓✓  
 1.3.3 Overcapitalisation ✓✓  
 1.3.4 Dihybridism ✓✓  
 1.3.5 Genetic engineering / modification ✓✓

(5 x 2) (10)

**QUESTION 1.4**

- 1.4.1 labour ✓  
 1.4.2 segmentation ✓  
 1.4.3 losses/risk ✓  
 1.4.4 retail ✓  
 1.4.5 atavism ✓

(5 x 1) (5)

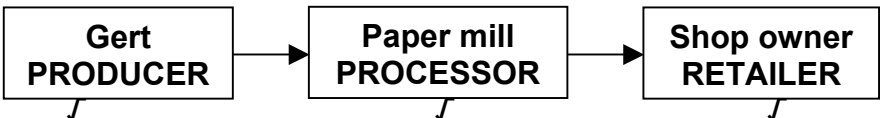
**TOTAL SECTION A: 45**

**SECTION B****QUESTION 2****2.1 The dairy farmer that changed to a wood operation**

- 2.1.1 Yes ✓ and (1)  
Recognise a business opportunity ✓  
Willing to take a risk to start this business venture ✓ (Any 1) (1)

- 2.1.2 Buy new equipment ✓  
Built more storage facilities ✓  
Retraining of labour ✓  
Development of a market for wood ✓  
Sell old dairy equipment ✓  
Sell cattle ✓  
Rent out his pastures ✓ (Any 4) (4)

- 2.1.3 Chipped and sent for paper production ✓  
Compressed wood ✓  
Changed into charcoal ✓  
Cut for construction / mining ✓  
Bark extract for leather production ✓ (Any 2) (2)

- 2.1.4
- 
- ```

graph LR
    A[Gert PRODUCER ✓] --> B[Paper mill PROCESSOR ✓]
    B --> C[Shop owner RETAILER ✓]
  
```
- (3)  
[11]

**2.2 Budget of a rose producer**

- 2.2.1 Planning ✓ (1)

- 2.2.2 Floral shops ✓  
Nurseries ✓  
Fertiliser / Compost retailers ✓ (3)

- 2.2.3 Total returns – Total cost = Total Profit  
R477 500 ✓ – R143 565.30 ✓ = R333 934.80 ✓ (3)

- 2.2.4 Access to loan ✓  
Access to support and advisory services ✓  
Access to land ✓  
Access to training programs ✓ (Any 2) (2)  
[9]

**2.3 Invention to store wine**

- 2.3.1 Storage of wine ✓ (1)
- 2.3.2 Skin had been replaced with plastic ✓  
Waxed cardboard carton ✓  
Fitted with a tap ✓ (Any 2) (2)
- 2.3.3 Marketing skills ✓  
Creative / Innovative skills ✓  
Financial skills ✓ (Any 2) (2)
- 2.3.4 The tap does not allow air into the wine ✓  
No bacteria and air into the wine ✓  
No oxidation possible (skin collapses as wine is poured) ✓  
Greater efficiency when storing this wine ✓  
Packaged wine is easier to transport ✓ (Any 4) (4)  
[9]

**2.4 Demand and supply curve**

- 2.4.1 (a) A ✓ (1)  
(b) B ✓ (1)
- 2.4.2 At the stage where the quantities sold are less ✓ than 7 ✓  
Where the demand is more ✓ than the supply ✓  
Where the supply is less ✓ than the demand ✓ (Any 2) (2)
- 2.4.3 Any value between R8.00 and R9.00 (1)
- 2.4.4 Controlled marketing ✓  
Coordinated supply / reduce production ✓ (Any 1) (1)  
[6]  
**[35]**

**QUESTION 3****3.1 Pie diagram that represent the usage of water**

- 3.1.1 Crop production / Farming industry / irrigation enterprises ✓ **and** (1)  
The largest part of the pie diagram is represented by this industry ✓  
Irrigation and crop production is water intensive ✓ (Any 1) (1)

- 3.1.2 **Capital:** Dam / Wind pump / crops / livestock / irrigation equipment / Buildings / Orchard ✓  
**Labour:** Man working ✓  
**Land:** Cropping fields / pastures ✓ (3)
- 3.1.3 Irrigation / crop rotation / spacing of crops ✓ (1)  
[6]
- 3.2 Agri-business chain
- 3.2.1 Represent all activities / processes of an agricultural product ✓  
From the production on the farm to the purchase of the final product by the consumer ✓  
Includes processes like the preparation of soil, care of crops and animals ✓, processing, packaging and marketing ✓ (Any 2) (2)
- 3.2.2 (a) livestock / cattle / sheep / vehicle / lorry ✓ (1)  
(b) fences / sheds / broiler units / orchards and fields / land ✓ (1)
- 3.2.3 Fixed / permanent labour used throughout the year ✓  
Seasonal labour used during peak periods (e.g. harvesting / pruning) ✓  
Casual labour used to erect a fence or fix a road or building ✓ (Any 2) (2)
- 3.2.4 Good infrastructure / roads ✓  
Good utilisation of resources ✓  
Diversification lowers the risk / animals and crops are produced ✓  
Farm is neat / good fences / animal look healthy / in good condition ✓  
Good spacing of crops / trees in orchard ✓ (Any 2) (2)  
[8]
- 3.3 **Graph of assets in a wheat production enterprise**
- 3.3.1 A ✓  
Value decreases over time / wear and tear on movable capital items decreases their value ✓ (2)
- 3.3.2 Tractors ✓  
Harvesters ✓  
Trailers ✓  
Planters ✓  
Implements ✓  
Fertilisation equipment ✓  
Spray equipment ✓ (Any 2) (2)  
2)

- 3.3.3 The value of these assets increase over time / investment become more valuable over time ✓  
The value of these assets does not decrease like the value for assets in graph A ✓  
These assets are not subjected to wear and tear ✓ (Any 2) (2)
- 3.3.4 Overcapitalisation occur when too much capital is invested in an enterprise ✓ **and**  
The value of the asset as a whole will not increase with the same value as that which has been invested ✓  
The wheat farmer may have invested too much capital into his/her fixed assets and the value of his/her farm did not increase with the same value ✓ (Any 2) (2)
- [8]

3.4 **Candidates for position on commercial farm**

- 3.4.1 Candidate 1 or Candidate 2 (any male) ✓  
Candidate 3 (female) ✓  
The farmer needed to appoint a candidate from each gender and therefore a male and female candidate as indicated ✓ (3)
- 3.4.2 Basic Condition of Employment Act ✓✓ (2)
- 3.4.3 **Employment contract**  
  
Parties involved:  
**Farm Owner** (Employer): ..... ✓  
**Farm Worker** ((Employee): ..... ✓  
  
**Description of Conditions** of employment / including remuneration / termination of contract ✓  
**Date:** ..... ✓

**Checklist for marking:**

| Criteria                         | Evidence<br>1 mark | No-evidence<br>0 mark |
|----------------------------------|--------------------|-----------------------|
| <b>Particulars of employer</b>   |                    |                       |
| <b>Particulars of employee</b>   |                    |                       |
| <b>Description of conditions</b> |                    |                       |
| <b>Date</b>                      |                    |                       |

- 3.4.4 Training / skills development program ✓  
Financial incentives / extra bonuses / access to produce at lower prices (staff prices) / production bonuses / partnerships in enterprise / housing subsidies etc. ✓ (2)

- 3.4.5 Report this matter to the relevant authorities / police services ✓  
 Assist her in counselling program / medical treatment ✓  
 Upgrade security/ security guards / lights / fences ✓ (Any 2) (2)  
 [13]  
 [35]

**QUESTION 4**

**4.1 Schematic representation of the crossing of two parent animals**

4.1.1 50% ✓ (1)

4.1.2

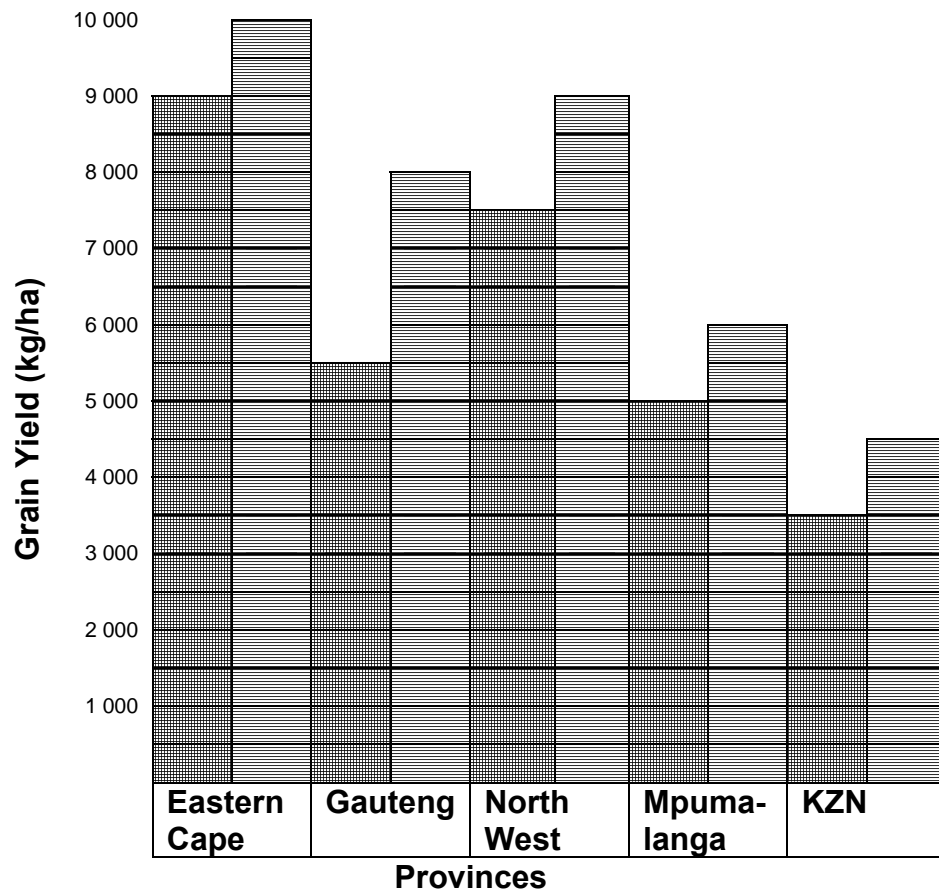
|          |          |          |
|----------|----------|----------|
| <b>A</b> | <b>B</b> | <b>C</b> |
| Shape ✓  | Colour ✓ | Colour ✓ |

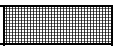

4.1.3 Shape – square ✓  
 Colour – white ✓ (2)

[6]

**4.2 Data on Non-GM maize and GM maize**

4.2.1 The graph for the yield performance of Non-GM maize compared to GM maize in five different provinces



|      |              |                                                                                     |
|------|--------------|-------------------------------------------------------------------------------------|
| Key: | Non-GM maize |  |
|      | GM maize     |  |

| CRITERIA                     | INDICATORS                                                                           |                                                                                |                                                                                  |
|------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| <b>Correctness of values</b> | Incorrect values and no indicators<br><b>0</b>                                       | Mostly correct values or indicators correct<br><b>1</b>                        | All values correct and all indicators correct<br><b>2</b>                        |
| <b>Correctness of graph</b>  | Not a bar graph and no heading<br><b>0</b>                                           | Bar graph or correct Headings<br><b>1</b>                                      | Bar graph and correct headings.<br><b>2</b>                                      |
| <b>Neatness</b>              | No neat bars and did not use a ruler for lines and no measured distances<br><b>0</b> | Neatly drawn bars or used a ruler for lines or measured distances.<br><b>1</b> | Neatly drawn bars and used a ruler for lines and measured distances.<br><b>2</b> |
| <b>TOTAL</b>                 | <b>(6)</b>                                                                           |                                                                                |                                                                                  |

(6)

4.2.2 Kwazulu-Natal (1)

4.2.3  $7\ 900 - 5\ 700 = 2\ 200 \checkmark$

$2\ 200 / 7\ 900 \times 100 \checkmark = 27.8\% \text{ or } 28\% \checkmark$  (3)

4.2.4 Higher yields  $\checkmark$   
More resistance against pests / maize stalk borer  $\checkmark$  (2)  
[12]

4.3 **Kobus Stofburg’s breeding programme for dairy cows.**

4.3.1 **Two quantitative traits/characteristics of the breeds**  
Temperament  $\checkmark$   
Heat tolerance/resistance  $\checkmark$  (2)

4.3.2 **Three reasons**  
Improvement of the body size, frame, hooves, legs and udders  $\checkmark$   
The growth rate of the crossed calves  $\checkmark$   
Long productive lives  $\checkmark$   
Production of more milk  $\checkmark$   
Heat tolerance/resistance  $\checkmark$   
Good temperament  $\checkmark$  (3)  
(Any 3)

4.3.3 **Two parents of the crossed calves**  
Holstein cows  $\checkmark$   
SA Dairy Swiss  $\checkmark$  (2)

4.3.4 Cross breeding  $\checkmark$   
the homozygous/pure bred Holstein cows were mated with the homozygous/pure bred SA Dairy Swiss bulls  $\checkmark$  (2)  
[9]



#### 4.4 External factors affecting the height of the crops.

##### 4.4.1 Three external factors

Soil factors (chemical/nutritional -pH, fertility, leaching, organic matter or physical- properties, texture, structure etc) ✓

Temperature ✓

Light intensity ✓

Diseases and pests ✓

Moisture content in the soil ✓

(3)

##### 4.4.2 Height of the crops ✓

(1)

[4]

#### 4.5 Graph for the variation in fat content

##### 4.5.1 Holstein breed ✓

(1)

##### 4.5.2 Holstein / Ayrshire ✓

(1)

##### 4.5.3 Jersey ✓

(1)

##### 4.5.4 Difference in performance between individuals in the population / variation between individuals in the population for fat production in milk ✓

(1)

[4]

**[35]****TOTAL SECTION B: 105****GRAND TOTAL: 150**