



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

AGRICULTURAL SCIENCES P2

FEBRUARY/MARCH 2011

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

(10 x 2) (20)

QUESTION 1.2

1.2.1	C ✓✓
1.2.2	E ✓✓
1.2.3	D ✓✓
1.2.4	G ✓✓
1.2.5	I ✓✓

(5 x 2) (10)

QUESTION 1.3

- 1.3.1 Land ✓✓
 1.3.2 Productivity ✓✓
 1.3.3 Manager/Entrepreneur ✓✓
 1.3.4 Genetic engineering/modification ✓✓
 1.3.5 GMO/Transgenic ✓✓

(5 x 2) (10)

QUESTION 1.4

- 1.4.1 Visionary/strategic ✓
 1.4.2 Physical ✓
 1.4.3 Fixed/immovable ✓
 1.4.4 Casual ✓
 1.4.5 Dominant ✓

(5 x 1) (5)

TOTAL SECTION A: 45

SECTION B**QUESTION 2****2.1 Khakibos production**

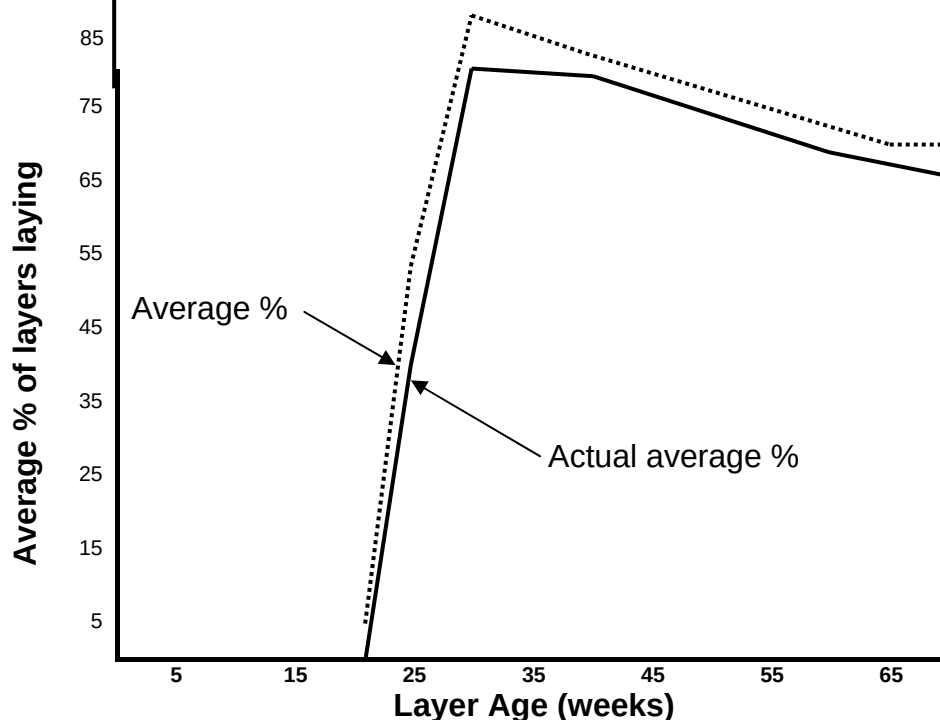
- 2.1.1 THREE reasons to prove that farming with khakibos is profitable:
- The herb produces essential oil that is in demand ✓
 - The production started slowly, but in 1995 it was exported to Europe (Highlands Essential Oils) ✓
 - Value adding is a sign of an enterprise that is booming ✓
 - There is lower security risk ✓ (Any 3) (3)
- 2.1.2 THREE factors/methods used to determine the price of a product:
- Determine the cost incurred in the product ✓
 - Competition orientated or going rate/price ✓
 - Market orientated pricing/demand and supply on the market ✓
 - Quality of the product ✓
 - Value-adding/processing of the product ✓ (3)
- 2.1.3 TWO strategies to increase profits:
- Value adding/processing ✓
 - Diversification ✓
 - Specialisation ✓ (Any 2) (2)
- 2.1.4 TWO ways in which value was added to the khakibos
- Distillation ✓
 - Refrigeration/freezing ✓
 - Packaging the product in polystyrene containers ✓ (Any 2) (2)
- [10]

2.2 The prices that farmers received over two years at a fresh produce market

- 2.2.1
- Larger demand by consumers ✓
 - More consumers / increase in the population ✓
 - Less supply by producers ✓
 - Inflation pressures ✓
 - Higher input costs ✓
 - More efficient / Better marketing ✓ (Any 2) (2)
- 2.2.2
- Lots of onions were market ready and the supply of onions were high / peak season for harvesting onions / low demand by consumers ✓
 - which led to an oversupply of onions at the market ✓ (2)
- 2.2.3
- Very little onions were available to market / not the ideal time to harvest onions / available onions were imported / high demand for onions by consumers ✓
 - which led to shortages of onions at the market ✓ (2)
- 2.2.4 Cool environment / dry environment / good ventilation ✓ (1)
- [7]

2.3 **Layers laying eggs:**

2.3.1



Checklist for marking the graph above:

Criteria	Yes (1 mark)	No (0 marks)
Was a line graph drawn?	✓	
Are both axes labelled?	✓	
Heading appear?	✓	
Both values correctly plotted?	✓	

(4)

2.3.2 No ✓

The production of this farmer is constantly below the average for that district ✓

(2)

2.3.3 Farmer: $10\,000 \times 82/100$
 $= 8\,200$ eggs ✓
 District: $10\,000 \times 88/100$
 $= 8\,800$ eggs ✓
 Difference: $8\,800 - 8\,200$
 $= 600$ eggs per day ✓

(3)

[9]

2.4 **Business plan of a small scale farmer:**

2.4.1 Total costs: $1\,500 + 875$
 $= 2\,375$ ✓
 Total returns: $6\,000$ ✓

Profit/loss: Total returns – Total costs
 $= 6\,000 - 2\,375$
 $= R\,3\,625$ ✓ (Profit) ✓

(4)

- | | | |
|-------|--|---------------------------|
| 2.4.2 | <ul style="list-style-type: none"> • The expenses will be reduced ✓ • And result in a larger profit ✓ | (2) |
| 2.4.3 | <ul style="list-style-type: none"> • Processing the chickens into portions / packaging ✓ • Cooking them and selling ready to eat portions / gizzards ✓ • Selling chicken livers / leg portions ✓ • Removal of feathers ✓ | (Any 2) (2) |
| 2.4.4 | Chicken manure (litter) / feathers for processing into chicken feed / cattle feed ✓ | (1) |
| | | [9]
[35] |

QUESTION 3

3.1 Challenges to Production factors

- | | | | |
|-------|---|---------|-----|
| 3.1.1 | TWO factors of production | | |
| | <ul style="list-style-type: none"> • Land ✓ • Management ✓ • Capital ✓ | (Any 2) | (2) |
| 3.1.2 | Economic characteristic of land as production factor: | | |
| | <ul style="list-style-type: none"> • The law of diminishing returns ✓ • The production potential of land differs ✓ | | (1) |
| 3.1.3 | The problem of land as a production factor: | | |
| | <ul style="list-style-type: none"> • Availability / scarcity of agricultural land ✓ | | (1) |
| 3.1.4 | THREE provisions made to improve productivity of land | | |
| | <ul style="list-style-type: none"> • Water provision through irrigation systems ✓ • Consolidation of uneconomical units through environmental management ✓ • Used improved methods of agriculture through careful use of the fertilizers ✓ | | (3) |
| 3.1.5 | THREE factors that determine the value of land for agric. purposes: | | |
| | <ul style="list-style-type: none"> • Slope ✓ • Climate ✓ • Topography ✓ | | (3) |
- [10]

3.2 Income statement of a farming enterprise:**3.2.1 Classification of costs:**

- (a) Bank charges ✓
not linked to one enterprise in particular ✓ (2)
- (b) Feeds ✓
affected by the level of production ✓ (2)
- (c) Repairs to fixed improvements ✓
these will not vary with the level of production ✓ (2)

3.2.2 How losses can be reduced

- Mechanization ✓
- Increase their productivity ✓
- Reduce the Labour force ✓
- Send Labour for training ✓ (Any 2) (2)

3.3 HIV infected people in South Africa

3.3.1 2007 ✓ (1)

3.3.2 6 million ✓ (1)

- 3.3.3
- Smaller number of labour available for employment ✓
 - Lower productivity of labour / more sick people ✓
 - Higher cost to keep people healthy ✓
 - Labour would become more expensive ✓ (Any 3) (3)

- 3.3.4
- Education ✓
 - Health care programs ✓
 - Supply condoms ✓
 - Supply vitamin supplements / anti retroviral medication ✓
 - Encourage good values ✓ (Any 3) (3)

3.4 Family on three hectares of land

- 3.4.1
- Borehole ✓
 - Reservoir ✓
 - Land ✓
 - Homestead ✓
 - Pig and broiler housing ✓ (Any 3) (3)

- 3.4.2
- Intercropping systems / scientific methods of farming ✓
 - Irrigation system ✓
 - Diversification adopted / intensive production ✓ (Any 2) (2)

- 3.4.3 Diversification ✓ – risk is spread to different enterprises ✓
Irrigation ✓ – less dependence on rainfall and unpredictable climate ✓
Scientific practices ✓ – more precise way to measure inputs ✓ (Any 2) (2)
- 3.4.4
- Organic fertilisation / farm manure / chicken or pig manure / compost ✓
 - They farm organically and would not use any inorganic fertilisers ✓
- (2)
[9]
[35]

QUESTION 4

- 4.1 **The crossing between a purebred white-faced bull and a purebred black-faced cow**
- 4.1.1 White faced animals ✓
- The trait is represented by capital B ✓
 - All/100% of the offspring have/has white faces (F_1 generation) ✓ (Any 1) (1)
- 4.1.2
- Possible genotypes are BB or Bb and no bb ✓
 - bb represents the black faces ✓
 - No bb is equal to 0% black faces ✓ (Any 2) (2)
- 4.1.3
- Somatic cells have double/twice the number of chromosomes/ $2n$ /diploid ✓
 - Gametes have half the number of chromosomes/ n /haploid ✓ (2)
[14]
- 4.2 **The breeding programme of Agapanthus plants**
- 4.2.1
- (i) Bb ✓
- (ii) Bb ✓ (2)
- 4.2.2 100% ✓ is Bb ✓ (2)
- 4.2.3
- 25% BB ✓
- 50% Bb ✓
- 25% bb ✓ (2)
- 4.2.4 25% ✓ (1)

4.3 Female offspring for a dairy producer:

- Male animal (bull) is represented by: XY gametes X or Y ✓
- Female animal (cow) is represented by: XX gametes X or X ✓

	X	Y
X	XX	XY
X	XX	XY

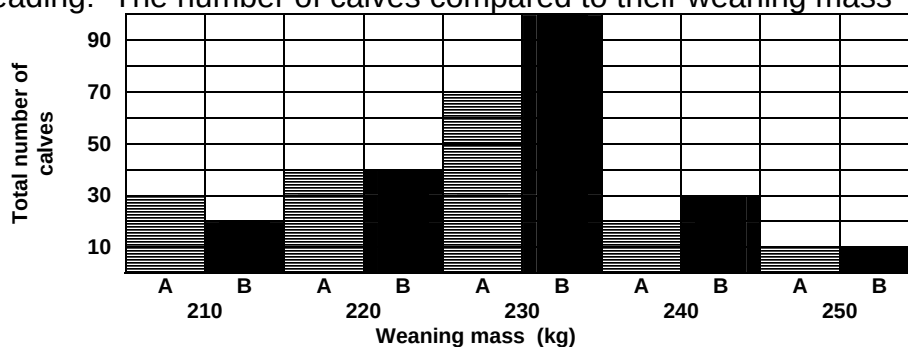
✓

Therefore 50 % chance of female calve ✓

(4)

4.4 The measurements obtained from a birth weight to a weaning mass.

4.4.1 Heading: The number of calves compared to their weaning mass



Use the following checklist to assess these graphs:

Criteria	Yes (1 mark)	No (0 marks)
Heading supplied	✓	
X axis labelled	✓	
Y axis labelled	✓	
Correctly plotted graph for 1st year	✓	
Correctly plotted graph for 1st year	✓	
Bar graphs used	✓	

(6)

4.4.2 Calves with a weaning mass of above 230 kg ✓

(1)

- 4.4.3
- Genetic factors / selection / breeding ✓
 - Feeding strategy ✓
 - Housing / Shelter ✓
 - Management ✓

(Any 3) (3)
[10]

4.5 Growing Bt cotton in KwaZulu-Natal

- 4.5.1
- To have a more effective herbicide program ✓ because non selective herbicides can be used on these crops ✓
 - Herbicide resistance by weeds ✓ can be more effectively controlled by using these non selective herbicides ✓ (Any 2) (2)
- 4.5.2
- He has lower weed competition / better weed control ✓ and therefore his cotton produce at higher yields / increase of 25% ✓ (2)
- 4.5.3
- More adaptable plants to specific environmental conditions ✓
 - Disease resistance ✓
 - Pest resistance ✓
 - Resistance against drought ✓
 - Better quality products ✓ (Any 3) (3)

[7]
[35]

TOTAL SECTION B: 105
GRAND TOTAL: 150