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)

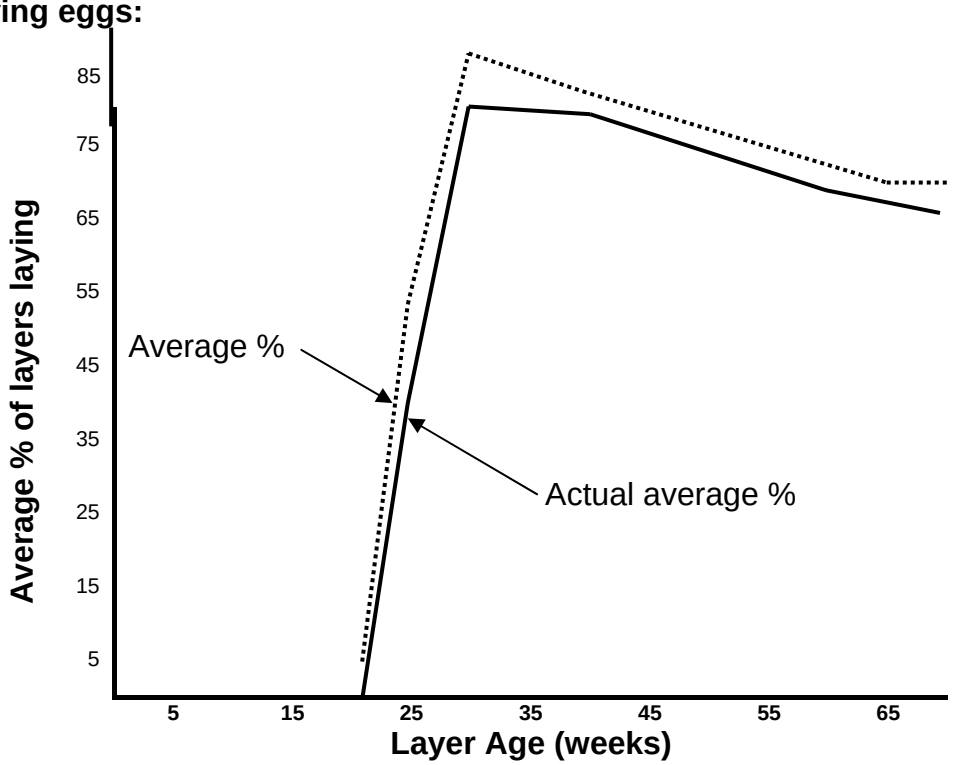
2.2.3
- Very little onions were available to market / not the ideal time to harvest onions / available onions were imported / high demand for onions by consumers ✓
- which led to shortages of onions at the market ✓ (2)

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 x 82/100
= 8 200 eggs ✓
District: 10 000 x 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
- The expenses will be reduced ✓
- And result in a larger profit ✓ (2)

2.4.3
- 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
- Land ✓
- Management ✓
- Capital ✓ (Any 2) (2)

3.1.2 Economic characteristic of land as production factor:
- The law of diminishing returns ✓
- The production potential of land differs ✓ (1)

3.1.3 The problem of land as a production factor:
- Availability / scarcity of agricultural land ✓ (1)

3.1.4 THREE provisions made to improve productivity of land
- 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:
- 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 ✓

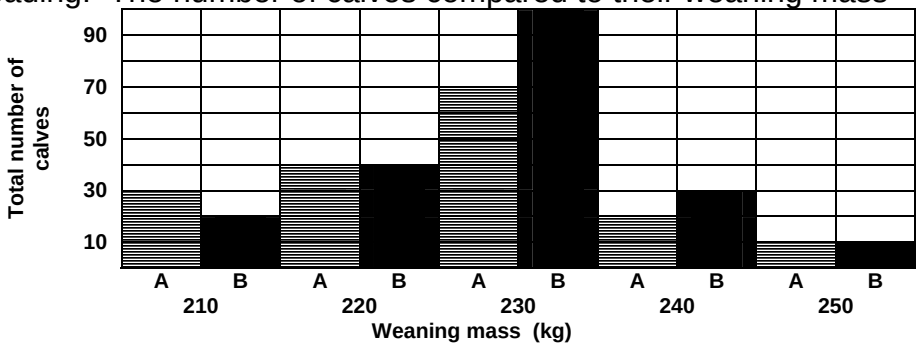
	X	Y
X	XX	XY
X	XX	XY

✓

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