



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

AGRICULTURAL SCIENCES P2

MEMORANDUM

FEBRUARY/MARCH 2013

MARKS: 150

This memorandum consists of 9 pages.

SECTION A**QUESTION 1.1**

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

(10 x 2) (20)

QUESTION 1.2

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

(5 x 2) (10)

QUESTION 1.3

- 1.3.1 Marketing margin ✓✓
1.3.2 Advertising/Marketing ✓✓
1.3.3 Niche marketing ✓✓
1.3.4 Dominance ✓✓
1.3.5 Transgenic transfer/genetic modification ✓✓

(10 x 2) (10)

QUESTIONS 1.4

- 1.4.1 Supply ✓
1.4.2 Loan/Credit/Borrowed capital ✓
1.4.3 Manager ✓
1.4.4 Inbreeding ✓
1.4.5 Gene gun ✓

(5 x 1) (5)

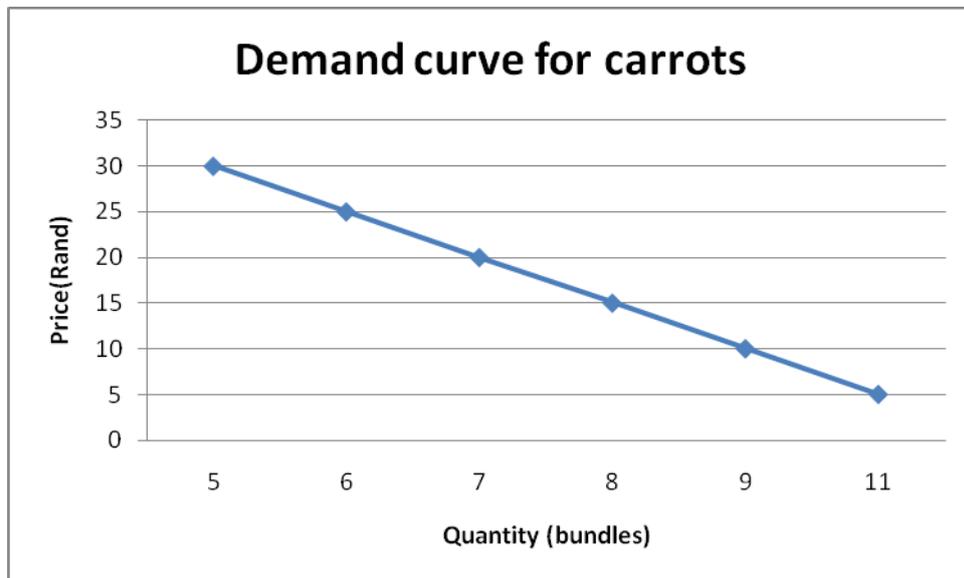
TOTAL SECTION A: 45

SECTION B

QUESTION 2: AGRICULTURAL MANAGEMENT

2.1 Supply and demand

2.1.1 **Graph: Demand curve**



Marking graph with the following checklist

Criteria	Yes:1 Mark	No: 0 Mark
1. Line graph	1	
2. X axis labelled	1	
3. Y axis labelled	1	
4. Points are plotted correctly	1	
5. Correct heading	1	
6. Units are indicated on both axes	1	

(6)

2.1.2 **Effect of Supply and demand on the price**

- increase in the quantity demanded for the product will lead to an increase in the price ✓
- the supply remained the same and the demand increased which led to a shortage at the market for the product ✓

(2)

2.1.3 **Problems related the marketing of agricultural products**

- Distance to the markets/transport is expensive
- Most products are perishable/need cooling/ need preservative measures
- Many products are very bulky/difficult to transport
- Many products are seasonal/prices vary during the year due to changes in supply
- Products are linked to specific production areas
- Products are difficult to standardise/biological products

(Any 4) (4)

2.2 Kenneth Mills Project**2.2.1 Advantages of the project**

- Opportunities of being employed will be created✓
- Processing of their products for free✓
- Readily available markets for their produce✓
- Possibility of tourism✓

(Any 2) (2)

2.2.2 Reasons for ground peanut butter

- Increase the value of their produce✓
- Increase source of income/earn more income✓
- Spread risk/less risk✓
- Increase the size of the market for their produce✓

(Any 2) (2)

2.2.3 Type of marketing function

Processing/Value adding/Grading/Advertising/Storage✓

(1)

2.2.4 Attractions for tourist

- Value for money/low prices/lower cost of living✓
- Rural area/Natural beauty✓
- African environment✓
- Processing plant✓

(Any 2) (2)

2.3 Marketing chain**2.3.1 Aspect of marketing**

Marketing chain/distribution network ✓

(1)

2.3.2 Consumer that will pay most

Consumer C✓

Motivation

The most intermediaries are used/the product has been value added✓

(2)

2.3.3 Match of statement to consumer

(a) Consumer A✓

(1)

(b) Consumer D✓

(1)

(c) Consumer C✓

(1)

2.4 Marketing mix**2.4.1 Aspects represented by the four P's**

- Product✓
- Pricing✓
- Placement✓
- Promotion✓

(4)

2.4.2 Disadvantages faced by the small scale farmers

- Marketing is time consuming/less time for production aspects✓
- Marketing is costly/cost factor/promotion has a cost/not enough capital to pay for promotion material✓
- Lack of experience✓
- Competition between these small scale farmers might arise✓

(Any 2) (2)

2.5 Advantages of free marketing

- The farmer decides which consumer/market outlet t she prefers to sell her produce to ✓
- The price at which produce is sold is determined by the farmer ✓
- The farmer can sell the product at any market/any place✓
- Payments are received in cash by the farmer ✓
- The farmer receives the payments immediately✓
- Creativity/entrepreneurship is promoted/Farmer can sell in unique ways✓
- Quality products are promoted ✓

(Any 4) (4)
[35]**QUESTION 3: PRODUCTION FACTORS AND MANAGEMENT****3.1 LEMON GRASS SUCCESS STORY****3.1.1 Diversification**

- More production enterprises are included in the farming enterprise✓
- to create opportunities to generate income from different sources of income on the farm✓ and
- contribute to the more efficient/effective use of resources✓

(Any 2) (2)

3.1.2 Name of institution

- Old Mutual✓

(1)

3.1.3 Type of marketing

Cooperative marketing/pool system ✓

Motivation:

There is stabilisation of the price they receive for the produce ✓

Better bargaining power as they are a group ✓ (Any 1) (2)

3.1.4 Aspects that training focused on

- Processing✓
- Drying ✓
- Packaging✓
- Harvesting✓

(Any 1) (1)

3.1.5 Risk factor

Disease/Mould infection

(1)

3.1.6 **Solution to the 2010 Challenge**

- Diversified their product range✓
 - by adding lemon grass essential oils/Lemon grass soap✓
 - not just drying their product✓
- (Any 2) (2)

3.2 **Managerial planning**

3.2.1 **(a) Activity done daily**

- Prepare three broiler houses✓
 - Remove old bedding✓
 - Observe cattle✓
 - Filled water troughs✓
 - Feeding activities✓
- (Any 1) (1)

(b) Activity done seasonally

- Harvest sunflower✓
 - Weaning ✓
 - Branding ✓
- (Any1) (1)

3.2.2 **Suitable labourers**

- (a) Seasonal labourers/Temporary labourers✓
 - (b) Permanent labourers ✓
- (2)

3.2.3 **Type of farm work**

Paint workshop✓

Casual labourer

This job or work is just completed and the labourers leave the farm/employment✓

(2)

3.2.4 **Different assets (any one example of each below)**

Fixed	Movable	Working
Assets that are durable, that can be used for a period of over ten years✓ Examples :land, house 1,2 &3, workshop, handling facilities✓	Assets that have a life span of less than ten years ✓ Examples: harvester, tractor trailer, cattle, calves✓	Assets with a life span of a period of less than two years✓ Example: Loose hand tools, paint, Branding Equipment & Remedies✓

(6)

3.3 **Management of tasks**

3.3.1 **Definition of control**

- The responsibility of a person with authority to, experience ✓
 - to physically look at ,check and compare and judge ✓
 - work done by subordinates against the standards set✓
- (Any 2) (2)

- 3.3.2 **Aspects that influence level of control**
 (a) experience ✓ (1)
 (b) trustworthiness ✓ (1)
- 3.3.3 **Practical measures of control**
- Worker card system ✓
 - Attendance register/time register ✓
 - Computerised/electronic system ✓
 - Security gate entrance ✓
 - Roll call/report to fore man or supervisor ✓ (Any 2) (2)
- 3.4 **Record keeping**
- 3.4.1 **Calculation of profit**
Farmer A: Income – Expenditure = profit
 $= 37\ 600.00 - 33\ 500.00$ ✓
 $= 4\ 100.00$ ✓
Farmer B: Income – Expenditure = profit
 $= 32\ 200.00 - 34\ 300.00$ ✓
 $= -2\ 100$ (loss) ✓ (4)
- 3.4.2 **Farmer making more profit**
 Farmer A ✓ and
Reasons:
- Sells chicken litter/manure/generate an extra income ✓
 - Spends less money on feed than farmer B ✓ (Any 1) (2)
- 3.4.3 **How farmer B can increase his profit**
- Sell manure as a feed to the feedlot industry or livestock farmers/to the community as manure for crop production ✓
 - Reduce the cost of feed by buying in bulk or at alternative cheaper suppliers ✓ (2)
- [35]**

QUESTION 4: BASIC AGRICULTURAL GENETICS

- 4.1 **Cell Division**
- 4.1.1 **Type of dominance**
- Incomplete dominance ✓
- Reason:** The offspring has characteristics that are in between those of the parents/the dominant trait is not totally visible in the offspring/purple and white flowers produce a pink offspring ✓ (2)
- 4.1.2 **Process marked B**
 Meiosis ✓ (1)
- 4.1.3 Gametes/male gametes/pollen ✓ (1)
- 4.1.4 $F^P F^W$ ✓ (1)
- 4.1.5 1 purple flower ✓ : 2 pink flowers ✓ : 1 white flower ✓ or 1 ✓ : 2 ✓ : 1 ✓ (3)

4.2 **Cross of purebreds**

4.2.1 **PARENTS:**

Phenotype: green leaves X variegated leaves
 ✓Genotype: Gg gg
 ✓Gametes: G or g g or g

F₁ generation:

	G	g
g	Gg	gg
g	Gg	gg

Phenotypic ratio: 2 (green leaves) ✓ : 2 (variegated leaves) ✓
 Genotypic ratio: 0GG:2Gg✓:2gg✓ (6)

4.2.2 $\frac{1}{2} \times 100$
 50%✓ (1)

4.2.3 $\frac{1}{4}$ ✓ x 64
 = 16 plants ✓ (2)

4.3 **Difference between natural and artificial selection**

4.3.1 Artificial pollination/cross pollination✓ (1)

4.3.2 **Actions during artificial pollination**

- Flowers on donor plants are first emasculated: anthers removed or killed before they shed pollen✓
- Flowers then covered with small paper bags, glassine or cellophane to prevent insect and foreign pollen✓
- Anthers removed with tweezers✓
- Pollen from selected male parent is applied by brushing or dusting it on the pistil when the stigmatic of the latter is receptive✓
- Pollinated flowers covered with paper bags again to protect them from foreign pollen again✓
- Seeds that develop from the cross pollinated flowers, when planted produce plants of the first filial generation✓ (Any 4) (4)

4.3.3 **Genetic contribution**

50% or $\frac{1}{2}$ of the genetic make of the seed✓ as each parent contribute equally to the offspring✓ (2)

- 4.3.4 **Natural selection**
- Individual organisms(animals or plants) with favourable characteristics/traits are controlled by nature and where survival and reproduction of the fittest individuals apply ✓
- Artificial selection**
- The intentional or unintentional modification of a cultivar through human action which encourages the breeding of certain traits over others✓ (2)
- 4.4 **Genetic modification of plants**
- 4.4.1 **Breeding process**
Genetic engineering/biotechnology/Genetic manipulation ✓ (1)
- 4.4.2 **Two aims of the illustrated process**
- Rapid improvement of genetic make up✓
 - Built in DNA from another organisms to manipulate characteristics✓
 - Change the genetic make-up of a plant✓ (2)
 - Change/improve the characteristics of a plant cultivar✓
(Any 2)
- 4.4.3 **Schematic illustration to create a GM plant**
- A** Desired gene inserted into plasmid✓
- B** Plasmid inserted into plant cell/disabled to prevent them from causing disease in the recipient plant✓
- C** Plasmid inserts desired gene into plant DNA/Used as a carrier to transfer a piece of its DNA into the chromosome of a plant✓
- D** Tissue culture is then formed/Plant pieces are then grown into whole✓ (4)
- 4.4.4 **Environmental benefits**
- Reduce the need for chemical spraying/herbicides✓
 - Tolerant to extreme conditions(cold, drought, salinity) ✓ (2)

[35]

TOTAL SECTION B: 105**GRAND TOTAL: 150**