



# basic education

Department:  
Basic Education  
**REPUBLIC OF SOUTH AFRICA**

## **NATIONAL SENIOR CERTIFICATE**

**GRADE 12**

**AGRICULTURAL SCIENCES P2**

**EXEMPLAR 2014**

**MEMORANDUM**

**MARKS: 150**

**This memorandum consists of 8 pages.**

**SECTION A****QUESTION 1**

1.1	1.1.1	A ✓✓		
	1.1.2	C ✓✓		
	1.1.3	D ✓✓		
	1.1.4	C ✓✓		
	1.1.5	B ✓✓		
	1.1.6	B ✓✓		
	1.1.7	A ✓✓		
	1.1.8	A ✓✓		
	1.1.9	B ✓✓		
	1.1.10	A ✓✓	(10 x 2)	(20)
1.2	1.2.1	E ✓✓		
	1.2.2	B ✓✓		
	1.2.3	G ✓✓		
	1.2.4	F ✓✓		
	1.2.5	D ✓✓	(5 x 2)	(10)
1.3	1.3.1	Marketing margin ✓✓		
	1.3.2	Advertising/Marketing ✓✓		
	1.3.3	Niche marketing ✓✓		
	1.3.4	Complete dominance ✓✓		
	1.3.5	Transgenic transfer/Genetic modification ✓✓	(5 x 2)	(10)
1.4	1.4.1	Supply ✓		
	1.4.2	Loan/credit/borrowed money ✓		
	1.4.3	Mechanisation ✓		
	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 Data and graph on marketing of TWO agricultural products**

- 2.1.1 It is the quantity of a product bought or purchased✓  
at a particular price✓ at a given time (2)
- 2.1.2 Curve A: Goat meat✓  
Curve B: Pork/pig meat✓ (2)
- 2.1.3 Higher demand for his/her product✓  
Higher prices for his/her product✓ (2)
- 2.1.4 R40,00✓✓ (2)
- 2.1.5 5 000 kg✓✓ (2)
- 2.1.6 Cultural/religious reasons or preferences✓✓ (2)

**2.2 Financial record-keeping**

- 2.2.1 **Importance of keeping financial records**  
  - To manage the capital of a farm ✓
  - To analyse past and current performance ✓
  - To plan for the future of the farm ✓
(Any 2) (2)
- 2.2.2 Profit = income – expenses ✓  
= R2 058 – R1 093 ✓  
= R965 ✓✓ (4)
- 2.2.3
  - Farm workers receive fruits for free✓
  - Bonus payments to workers✓
(Any 1) (1)
- 2.2.4 **Creation of capital**  
  - Production✓
  - Capital needed to start a business is obtained by means of credit✓
  - Savings✓
(Any 2) (2)

## 2.3 Free marketing compared to controlled marketing

### 2.3.1 Comparing TWO unique features of the pool marketing system with those of the free marketing system

Feature	Pool system	Free marketing system
Intermediaries	Simplifies marketing process, management as well as bookkeeping✓	Search for markets of produce✓
Product handling	Product handling is cheaper since produce is kept together or pooled, ✓	Producer to provide for collection, storage✓
Price fluctuations	Protected against price fluctuation/protected against low market prices/price is guaranteed✓	Prices not fixed and producer may be exposed to low market prices✓

(Any 2 x 2)

(4)

### 2.3.2 THREE advantages of free marketing

- The farmer decides which consumer/market outlet he/she prefers to sell his/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 3)

(3)

## 2.4 Marketing chain

2.4.1 Marketing chain/distribution network✓ (1)

2.4.2 Consumer C✓ (1)

Motivation:

The most intermediaries are used✓/the product has been value added✓ (2)

2.4.3 (a) Consumer A✓ (1)

(b) Consumer D ✓ (1)

(c) Consumer C ✓ (1)

**[35]**

**QUESTION 3: PRODUCTION FACTORS AND MANAGEMENT****3.1 Scenario on insects as a protein source**

- 3.1.1
- The ability to see a unique business opportunity in insects as a protein source✓
  - The willingness to take a risk to make it a reality by getting a loan to start this business (DBSA) ✓ (2)
- 3.1.2
- Good planning/strategic planning✓  
 Expansion of their business✓  
 Advice from experts✓  
 Involvement of researchers in the business✓  
 The signing of a contract with an animal feed company to secure supply ✓ (Any 1) (1)
- 3.1.3
- More production enterprises are included in the farming enterprise✓
  - To create opportunities to generate income from different sources of income on the farm
  - Contribute to the more efficient/effective use of resources✓
  - To explore new niche markets for the use of insects as a protein source for humans (Any 2) (2)
- 3.1.4 DBSA ✓ (1)
- 3.1.5 Cooperative marketing/pool system ✓ (1)
- Motivation:  
 There is stabilisation of the price they receive for the produce ✓  
 Better bargaining power as they are a group✓ (Any 1) (1)

**3.2 Photograph of a commercial farming operation**

- 3.2.1
- Latest technology/tractor/harvester✓ is utilised which is capital intensive/is expensive✓  
 Large area is planted✓ which requires large capital inputs✓  
 Mechanisation✓ is normally applied by commercial farming✓ (Any 1 x 2) (2)
- 3.2.2
- (a) Tractor or harvester driver/operator✓ (1)  
 (b) Tractor/harvester/shed/yield/fuel✓ (1)  
 (c) Cropping field/soil/space for agricultural production/vegetation/crop✓ (1)
- 3.2.3
- Latest technology is utilised✓  
 Crop is planted in rows✓  
 Large yield is visible from the harvester✓  
 Correct time to harvest this crop✓  
 Neat operation/systemic harvesting✓ (Any 2) (2)
- 3.2.4
- (a) Agricultural land is limited✓ (1)  
 (b) Agricultural land is subject to the law of diminishing returns ✓ (1)  
 (c) Land can be bought and sold✓ (1)  
 (d) Land is durable/indestructible ✓ (1)

- 3.2.5 (a) Long-term credit✓ – more than 10 years✓ (1)  
 (b) Land bank/Commercial banks ✓ (1)  
 (c) Interest is payable on repayments✓ (1)

### 3.3 Labour unrest at De Doorns in the Western Cape

- 3.3.1 Seasonal labour✓ (1)
- 3.3.2 Low wages✓  
 Rate of land reform✓ (2)
- 3.3.3 Drop in labour output/productivity✓  
 Damage to infrastructure✓  
 Closure of roads✓  
 Learner absenteeism✓ (Any 2) (2)
- 3.3.4 (a) Value increase =  $150 - 69 = 81$   
 Percentage increase:  $81/69 \times 100$ ✓  
 $= 117\%$ ✓ (2)  
 (b) R69✓/\$8,5✓  
 $= R8,12 \text{ per dollar}$ ✓ (2)
- 3.3.5 Loss of employment✓  
 Less household income✓  
 Destruction of infrastructure✓  
 Loss in foreign exchange✓  
 Loss in production✓  
 Less activity in local economy✓ (Any 3) (3)
- 3.3.6 Labour contract✓ (1)
- [35]**

**QUESTION 4: BASIC AGRICULTURAL GENETICS****4.1 Crossing between a brown male horse (stallion) and white female horse (mare)**

4.1.1 Brown colour (Male/Stallion/Father) ✓  
 White colour (Female/Mare/Mother) ✓ (2)

4.1.2 Stallion X Mare  
 Bb✓ X bb✓ (2)

4.1.3 Complete dominance ✓ (1)

4.1.4 First crossing/season: Bb✓  
 Second crossing/season: bb ✓ (2)

4.1.5

♂	♀	b	b✓
B	Bb	Bb	
b✓	bb	bb✓	

**OR**

♀	♂	B	b✓
b	Bb	bb	
b✓	Bb	bb✓	

(Only ONE mark for the gametes is allocated if the male or female is correctly indicated.) (3)

4.1.6 1✓ : 1✓  
 or  
 50%✓ : 50%✓ (2)

**4.2 The herb that releases mint fragrance**

4.2.1

**PARENTS**

Phenotype: mint fragrance X no mint fragrance ✓  
 Genotype: Aa aa✓  
 Gametes: A or a a or a

**F<sub>1</sub>-generation:**

	A	a
a	Aa	aa
a	Aa	aa

Phenotypic ratio: 2 (mint fragrance) : 2 (no fragrance)✓

Genotypic ratio: 0 AA:2 Aa:2 aa✓ (5)

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

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

### 4.3 Variation of maize plants

4.3.1 There is a variation in the size of maize plants. (1)

4.3.2

Size of plants	Number of plants
Small	6✓
Medium	3✓
Large	9✓
ONE MARK for table format✓	

(4)

4.3.3 This allows plant breeders to select the plants with the desired characteristics in a plant breeding program✓  
It is possible to identify the differences of plants with regards to some desired characteristics✓ (Any 1) (1)

### 4.4 The diagrams of TWO tomatoes

4.4.1 A✓ (1)

4.4.2 Fruit is bigger ✓  
DNA is added (represented by injection)✓ (2)

4.4.3 Bigger fruit size✓  
Higher nutrient status✓  
Fruit stays firm✓  
Fruit stays fresh for longer/longer shelf life✓ (Any 2) (2)

4.4.4 Larger yields✓  
Better quality grading/Better quality product✓  
Less perishability/longer shelf life✓  
Higher prices for the product✓  
Higher income/profit✓  
Facilitates marketing because of the longer shelf life✓ (Any 2) (2)

4.4.5 GM crops have not been researched for long and may have a potential health risk✓  
Some GM crops are herbicides resistant and may contribute to the creation of super weeds✓ (2)  
[35]

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