



# education

---

Department:  
Education  
**REPUBLIC OF SOUTH AFRICA**

**NATIONAL  
SENIOR CERTIFICATE**

**GRADE 12**

**AGRICULTURAL SCIENCES P2**

**EXEMPLAR 2009**

**MEMORANDUM**

**MARKS: 150**

**This memorandum consists of 8 pages.**

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

1.1.1	<b>A</b>	<b>B</b>	<b>X<sub>✓✓</sub></b>	<b>D</b>
1.1.2	<b>A</b>	<b>B</b>	<b>X<sub>✓✓</sub></b>	<b>D</b>
1.1.3	<b>A</b>	<b>B</b>	<b>C</b>	<b>X<sub>✓✓</sub></b>
1.1.4	<b>A</b>	<b>X<sub>✓✓</sub></b>	<b>C</b>	<b>D</b>
1.1.5	<b>A</b>	<b>B</b>	<b>X<sub>✓✓</sub></b>	<b>D</b>
1.1.6	<b>A</b>	<b>X<sub>✓✓</sub></b>	<b>C</b>	<b>D</b>
1.1.7	<b>A</b>	<b>X<sub>✓✓</sub></b>	<b>C</b>	<b>D</b>
1.1.8	<b>A</b>	<b>B</b>	<b>C</b>	<b>X<sub>✓✓</sub></b>
1.1.9	<b>X<sub>✓✓</sub></b>	<b>B</b>	<b>C</b>	<b>D</b>
1.1.10	<b>A</b>	<b>B</b>	<b>C</b>	<b>X<sub>✓✓</sub></b>

(10 x 2) (20)

**QUESTION 1.2**

1.2.1	<b>G<sub>✓✓</sub></b>
1.2.2	<b>F<sub>✓✓</sub></b>
1.2.3	<b>H<sub>✓✓</sub></b>
1.2.4	<b>B<sub>✓✓</sub></b>
1.2.5	<b>A<sub>✓✓</sub></b>

(5 x 2) (10)

**QUESTION 1.3**

- 1.3.1 Value adding/ Processing ✓✓  
 1.3.2 Grading ✓✓  
 1.3.3 Entrepreneurship ✓✓  
 1.3.4 Mutation/genetic engineering ✓✓  
 1.3.5 Cloning ✓✓

(5 x 2) (10)

**QUESTION 1.4**

- 1.4.1 Working ✓ (1)  
 1.4.2 Pool ✓ (1)  
 1.4.3 Seasonal ✓ (1)  
 1.4.4 Monohybridism ✓ (1)  
 1.4.5 Exotic ✓ (1)

(5 x 1) (5)

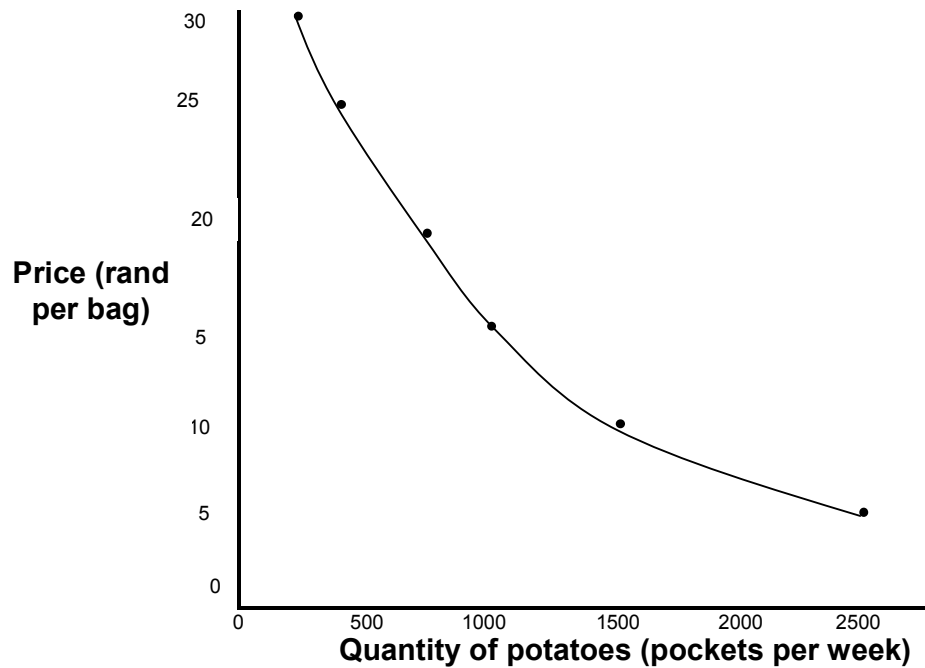
**TOTAL SECTION A: 45**

**SECTION B**

**QUESTION 2**

**2.1 Demand ,Supply and Price**

**2.1.1 Graph for different prices and quantities of potatoes sold**



Mark graph with the following checklist:

Criteria	Yes: 1	No: 0
1. line graph		
2. axes are labelled		
3. points are plotted accurately		
4. units are indicated		
5. values and correct headings		
6. correct measured distances		

(6)

2.1.2 R 5-00 ✓ – because 2 500 pockets were bought by consumers ✓

(2)

2.1.3 Less demand leads to low price ✓  
More demand leads to high price ✓

(2)

**2.2 Marketing of tomatoes**

2.2.1 Introducing another crop ✓  
Processing excess products ✓

(2)

- 2.2.2 Some may be lost due to perishability ✓  
Decrease in price/loss of profit ✓ (2)
- 2.2.3 Use of hydroponics/green houses ✓  
Introducing/adapting irrigation system ✓  
fertilisation ✓  
soil analysis ✓  
soil cultivation ✓ (Any 2) (2)
- 2.3 Soil as a production factor**
- 2.3.1 Soil is subject to the law of diminishing return ✓✓ (2)
- 2.3.2 The yield increases constantly ✓✓ (2)
- 2.3.3 The production does not increase at the same rate between  
10 – 15 as is 5 – 10 quantities ✓✓ (2)
- 2.3.4 Applying crop rotation ✓  
Mulching ✓  
Addition of organic material ✓  
Scheduled irrigation/water provision ✓ (Any 2) (2)
- 2.4 Free marketing of agricultural products**
- 2.4.1 Directly to consumers ✓  
Food processing factories ✓  
Wholesalers ✓  
Retailers ✓  
Through intermediaries ✓ (Any 2) (2)
- 2.4.2 Surplus/shortage/quantity ✓  
Real income of consumers ✓ (2)
- 2.4.3 Average prices guaranteed ✓  
Protects against variation ✓  
More time for farming activities ✓  
Direct contact with consumers/Feedback from consumers ✓ (Any 2) (2)
- 2.5 Business planning/diversification**
- 2.5.1 Wood industries/paper factories/ (1)
- 2.5.2 Equipment ✓  
Transport ✓  
Workers ✓  
Clothing ✓ (Any 2) (2)

- 2.5.3 Employment and better salary ✓ (2)  
**[35]**

**QUESTION 3****3.1 Case study: natural resources**

- 3.1.1 Aspects to be investigated  
 • Slope ✓  
 • Soil texture ✓  
 • Soil depth ✓  
 • Rockiness ✓  
 • Erosion ✓  
 • Availability of water for irrigation ✓ (Any 3) (3)
- 3.1.2 Negative impacts on the environment  
 Water contamination with agro chemicals and fertilisers, soil erosion ✓  
 Salination of soil from irrigation ✓ (2)
- 3.1.3 They may not care about the land , because it doest not belong to them ✓ (1)
- 3.1.4 Conservation of Agric Resources Act of 1983 (CARA) ✓  
 National Water Act of 1998 ✓  
 National Veld and Forest Fire Act of 1998 ✓  
 Suitable Utilisation of Agric Resources Bill of 2000 ✓ (Any 2) (2)

**3.2 Production factors**

- 3.2.1 (a) A ✓ (1)  
 (b) C ✓ (1)  
 (c) D ✓ (1)
- 3.2.2 E ✓ – labour ✓ (4)  
 F ✓ - land ✓
- 3.2.3 Land/F ✓ – land cannot be replaced ✓ (2)

**3.3 Farm labour**

- 3.3.1 Working hours ✓  
 Leave ✓  
 Payment/remuneration ✓ (3)

- 3.3.2 Seasonal workers are employed to do repetitive tasks on a farm such as harvesting/shearing and are released after completion of the task ✓✓  
Casual workers are employees engaged temporarily throughout the year and carrying out a single task(fencing, building) ✓✓ (4)
- 3.3.3 HIV/Aids results in loss of skills and experience, hence drop in agricultural production ✓✓ (2)
- 3.4 Intensive sheep farming enterprise**
- 3.4.1 Fixed cost – cost that is incurred regularly/constant(rent) ✓ (2)  
Running cost – cost incurred occasionally/related to production output/fluctuates(production costs)✓
- 3.4.2 Total cost for 10 000 =  $\frac{R220\,000}{R3\,022\,000} \times \frac{100}{1} = 7,2\%$ ✓
- Total cost for 20 000 =  $\frac{R220\,000}{R6\,220\,000} \times \frac{100}{1} = 3,5\%$ ✓
- Total cost for 30 000 =  $\frac{R220\,000}{R9\,220\,000} \times \frac{100}{1} = 2,3\%$ ✓ (3)
- 3.4.3 The percentage of fixed costs decreased the more the number of sheep in the feedlot increased/ (1)
- 3.4.4 Total cost: = R6000 000 + R220 000 = R6 220 000/  
Income = 20 000 sheep x 350 = R7 000 000/  
Profit = R7 000 000 – R6 220 000 = R780 000/ (3)  
**[35]**

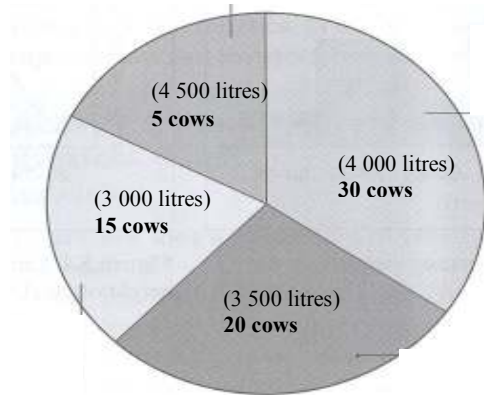
**QUESTION 4****4.1 Schematic representation of genotypes**

- 4.1.1 Female (AA) ✓ (2)
- 4.1.2 Somatic cells are diploid(double number of chromosomes) ✓  
Reproductive cells are haploid(single chromosome/reduced) ✓ (2)
- 4.1.3 25% homozygotic(dominant) ✓  
75% heterozygotic/  
25% homozygotic(recessive) ✓ (3)

- 4.1.4 Recessive trait does not appear in the phenotype(physical appearance) ✓  
Dominant trait appears in the phenotype(physical appearance) ✓ (2)

4.2 **Average milk yield**

4.2.1



Mark graph with the following checklist:

Criteria	Yes: 1	No: 0
1. pie graph		
2. charts are labelled		
3. chart divided accurately		
4. percentages indicated		
5. correct headings		
6. correct litres indicated		

(6)

- 4.2.2 All cows with average and above average milk yield ✓✓ (2)  
4.2.3 4 000 litres ✓ (1)  
4.2.4 Continuous variation ✓ (1)

4.3 **Broiler production**

- 4.3.1 Temperature ✓  
Diseases ✓ (2)  
4.3.2 Growth rate – directly linked to production output/income ✓✓ (2)  
4.3.3 Manipulates growth/leads to accelerated growth ✓✓ (2)

**4.4 Cattle breeding**

- 4.4.1 Cross breeding/ (1)
- 4.4.2 Develop new breeds ✓  
Adapt better in varying conditions/better vitality ✓  
More resistance to diseases ✓  
Gain in mass in relation to food intake ✓  
Leads to heterosis ✓ (Any 2) (2)
- 4.4.3 He may make money by selling bulls/sell to farmer A/ (1)

**4.5 Genetically modified crops**

- 4.5.1 In 2002/ – there was sharp decrease production/yield ✓ (2)
- 4.5.2 Unexpected long term effects on food ✓  
Unfavourable environmental impact ✓  
Socio-economic concerns/expensive ✓ (Any 1) (1)
- 4.5.3 More productive ✓  
Reduce the need for chemicals ✓  
Resistance to herbicide ✓  
Tolerant /adapt to conditions ✓  
Better flavour, colour, texture and nutritional value ✓ (Any 3) (3)

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