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Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

SENIOR CERTIFICATE EXAMINATIONS/ NATIONAL SENIOR CERTIFICATE EXAMINATIONS

AGRICULTURAL SCIENCES P2

MAY/JUNE 2024

MARKING GUIDELINES

MARKS: 150

These marking guidelines consist of 10 pages.

SECTION A**QUESTION 1**

1.1	1.1.1	C ✓✓		
	1.1.2	B ✓✓		
	1.1.3	D ✓✓		
	1.1.4	D ✓✓		
	1.1.5	A ✓✓		
	1.1.6	B ✓✓		
	1.1.7	B ✓✓		
	1.1.8	C ✓✓		
	1.1.9	D ✓✓		
	1.1.10	A ✓✓	(10 x 2)	(20)
1.2	1.2.1	D ✓✓		
	1.2.2	H ✓✓		
	1.2.3	E ✓✓		
	1.2.4	J ✓✓		
	1.2.5	B ✓✓	(5 x 2)	(10)
1.3	1.3.1	Price elasticity of demand ✓✓		
	1.3.2	Income statement ✓✓		
	1.3.3	Heterozygote/crossbreed/hybrid ✓✓		
	1.3.4	Quantitative ✓✓		
	1.3.5	Prepotency ✓✓	(5 x 2)	(10)
1.4	1.4.1	Standardisation/grading ✓		
	1.4.2	Variable ✓		
	1.4.3	Epistasis ✓		
	1.4.4	Physical ✓		
	1.4.5	Inbreeding depression/degeneration ✓	(5 x 1)	(5)

TOTAL SECTION A: 45

SECTION B**QUESTION 2: AGRICULTURAL MANAGEMENT AND MARKETING****2.1 Marketing functions****2.1.1 Identification of the marketing function**

- A** Transportation ✓ (1)
- B** Storage ✓ (1)
- C** Packaging ✓ (1)

2.1.2 Guidelines for packaging

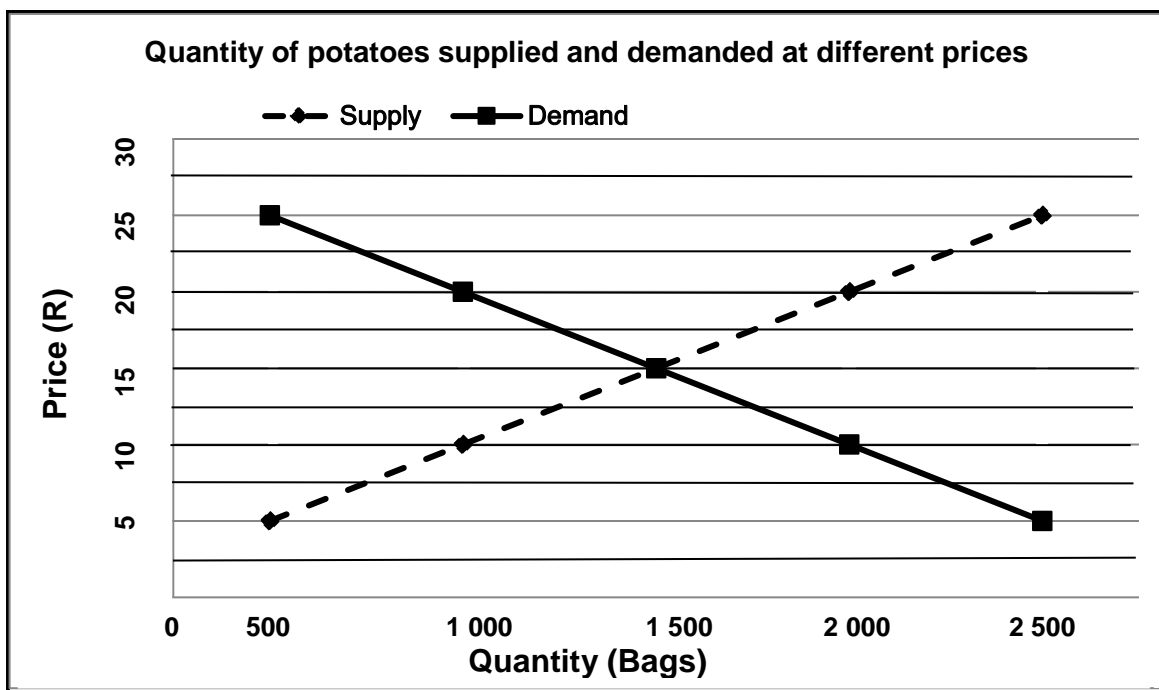
- E** Product identification ✓ (1)
- F** Containment ✓ (1)

2.1.3 TWO advantages of processing

- Increases the value of the product ✓
- A way of overcoming over-supply of product ✓
- Allows easier packaging, handling and transportation ✓
- Provides job opportunities ✓
- Enables the farmer to increase their share of final price paid for a product ✓
- Results in a product that has a longer shelf life ✓
- Reduces wastage of excess produce/prevent food spoilage ✓
- Improves food safety ✓
- Product is available throughout the year ✓ (Any 2) (2)

2.2 Supply, demand and price

2.2.1 Line graph



CRITERIA/RUBRIC/MARKING GUIDELINES

- Correct heading ✓
- X-axis: Correctly calibrated and labelled (Quantity) ✓
- Y-axis: Correctly calibrated and labelled (Price) ✓
- Correct units (Bags and R) ✓
- Line graph ✓
- Accuracy (80% + correct plotting) ✓ (6)

2.2.2 Law of supply

- The higher the price the more the quantities of potatoes supplied ✓✓
- The lower the price the lesser the quantities of potatoes supplied ✓✓ (Any 1) (2)

2.2.3 Condition in a market when the price is R15

- Market equilibrium/equilibrium point ✓ (1)

2.2.4 TWO factors influencing the demand of potatoes other than price

- Quality ✓
- Consumer preferences/taste ✓
- Income/buying power of consumers ✓
- Number of consumers ✓
- Price of competing/complementary/substitutes products ✓
- Range of products available ✓
- Use of the product ✓
- Fashion ✓
- Festive seasons ✓
- Advertisement ✓
- Legislation ✓
- Sociological ✓
- Research ✓

(Any 2) (2)

2.3 Approaches to agricultural marketing

- A** Multi-segment ✓ (1)
- B** Green marketing ✓ (1)
- C** Niche marketing ✓ (1)

2.4 Marketing channels of free marketing system**2.4.1 Identification of the marketing channel**

Internet/online marketing channel ✓ (1)

2.4.2 TWO advantages of the internet marketing channel for the farmer

- A large market can be reached/global reach ✓
- Money can be transferred before goods are delivered ✓
- Faster method to reach the consumers ✓
- Time saving/convenience ✓
- Cost effective/less capital intensive ✓
- Flexible/accessible anytime ✓

(Any 2) (2)

2.4.3 TWO marketing channels other than internet marketing

- Farm gate ✓
- Fresh produce ✓
- Stock sales/auctions ✓
- Direct/contact ✓

(Any 2) (2)

2.5 Factors hampering marketing of agricultural products

- 2.5.1 Bulkiness ✓ (1)
- 2.5.2 Costs for intermediaries/middlemen ✓ (1)
- 2.5.3 Perishability/spoilage ✓ (1)
- 2.5.4 Risk/delays/spoilage/theft ✓ (1)
- 2.5.5 Seasonal fluctuations ✓ (1)

2.6 Entrepreneurial success factors

- | | | |
|-------|-------|-------------|
| 2.6.1 | B ✓ | (1) |
| 2.6.2 | D ✓ | (1) |
| 2.6.3 | C/D ✓ | (1) |
| 2.6.4 | A ✓ | (1) |
| | | [35] |

QUESTION 3: PRODUCTION FACTORS**3.1 Land****3.1.1 Letter representing the functions of land**

- | | | |
|-----|---|-----|
| (a) | Provision of food - C ✓ | (1) |
| (b) | Provision of space for infrastructure - B ✓ | (1) |

3.1.2 Economic characteristic of land

- | | | |
|---|-----------------------------|-----|
| A | Land is limited ✓ | (1) |
| D | Value of land appreciates ✓ | (1) |

3.1.3 TWO ways in which land productivity can be improved

- Water management/provision/irrigation ✓
 - Consolidating small uneconomical land units ✓
 - Farming land more efficiently/precision farming/
use scientific farming methods ✓
 - Improving soil fertility ✓
 - Changing cropping practices ✓
 - Restoring land potential ✓
 - Responsible use of pesticides ✓
- (Any 2) (2)

3.1.4 The law of diminishing return

With the continued addition of more of one input to a productive process while other inputs are kept constant, a point will be reached where the output per unit of the added input will decline ✓✓ (2)

3.2 Labour productivity

- | | | |
|-------|--------------------------|-----|
| 3.2.1 | Motivation ✓ | (1) |
| 3.2.2 | Education ✓ | (1) |
| 3.2.3 | Recognition/motivation ✓ | (1) |
| 3.2.4 | Communication ✓ | (1) |

3.3 Labour skills**3.3.1 Indication of the best candidate as**

- (a) **Person to manage the business optimally** - Candidate 2 ✓ (1)
 (b) **A technical advisor** - Candidate 1 ✓ (1)

3.3.2 TWO reasons for the answer in QUESTION 3.3.1 (a)

- Higher scores/82% management skills/ability in management ✓
- Higher scores/80% interpersonal skills/ability in interpersonal skills ✓ (2)

3.3.3 Legislation regulating

- (a) **Safety**
Occupational Health and Safety Act/OHSA (No. 85 of 1993) ✓ (1)
 (b) **Participation in decision making**
Labour Relations Act/LRA (No. 66 of 1995) ✓ (1)

3.4 Capital**3.4.1 Types of capital**

- (a) C ✓ (1)
 (b) B ✓ (1)
 (c) A ✓ (1)

3.4.2 ONE source of capital

Financial institution/commercial banks/trust companies/Land bank/
 development bank/agricultural cooperatives/business partners/credit/
 production/grants/inheritance/family and friends/savings ✓ (1)

3.5 Balance sheet for the 28th of February 2023**3.5.1 Identification of the financial statement**

Balance sheet ✓ (1)

3.5.2 Provide the missing information for

- (a) Value of the farm ✓ (1)
 (b) Bank overdraft ✓ (1)
 (c) R4 000 000 ✓ (1)
 (d) R2 210 000 ✓ (1)

3.6 Income and expenditure graph**3.6.1 Identification of a farmer with highest income**

Farmer B ✓

(1)

3.6.2 Calculating the profit or loss for farmer A

Profit or loss = Total value of income – Total value of expenditure ✓

= R30 000 – R50 000 ✓

= – R20 000/loss ✓

(3)

3.7 Management**3.7.1 Management principles****(a)** Control ✓

(1)

(b) Implementation ✓

(1)

3.7.2 TWO external forces that affect a farming business

- Technological forces ✓
- Socio-cultural forces ✓
- Legal forces ✓
- Political forces ✓
- Ethical forces ✓
- Economic forces ✓
- Environmental forces ✓
- Competitive forces ✓

(Any 2)

(2)

[35]**QUESTION 4: BASIC AGRICULTURAL GENETICS****4.1 Monohybrid crossing****4.1.1 Punnett square**

Gametes	B	b
b	Bb	bb
b	Bb	bb

CRITERIA FOR MARKING

- Gametes of parent 1 ✓
- Gametes of parent 2 ✓
- Genotype of offspring ✓
- Punnet square populated with gametes and offspring genotypes ✓

(4)

4.1.2 Calculation of the percentage of pink flowers

- = $2 \div 4 \times 100$ ✓
- = 50% ✓

(2)

- 4.1.3 **Calculate the number of heterozygous offspring**
- = $2 \div 4 \times 350$ ✓
 - = 175 ✓
- (2)

4.2 **Monohybrid crossing presentation**

- 4.2.1 **Pattern of inheritance shown by Pair 1**
Incomplete dominance/co-dominance ✓ (1)
- 4.2.2 **Justification for co-dominance/incomplete for pair 1**
The alleles for both parents are dominant ✓ (1)
- 4.2.3 **The phenotype of Pair 2 offspring**
All round fruits ✓ (1)
- 4.2.4 **Genotypic ratio of Pair 2 offspring**
1AA : 1Aa ✓ (1)

4.3 **Crossing schematic representation**

- 4.3.1 **Mendel law that applies in the crossing**
The law of segregation ✓ (1)
- 4.3.2 **The process that resulted to (7)**
Fertilization ✓ (1)
- 4.3.3 **Genotypes and phenotypes**
- | | | | |
|-----|-----|---------|-----|
| (a) | (2) | White ✓ | (1) |
| | (7) | Dark ✓ | (1) |
| (b) | (1) | DD ✓ | (1) |
| | (6) | d ✓ | (1) |

4.4 **Variation**

- 4.4.1 **Genetic term**
Variation ✓ (1)
- 4.4.2 **TWO other internal factors**
- Mutation ✓
 - Random fertilization ✓
- (2)
- 4.4.3 **TWO methods of selecting farm animals**
- Progeny selection ✓
 - Family selection ✓
 - Pedigree selection ✓
 - Mass selection ✓
- (Any 2) (2)

4.5 Crossbreeding Holstein cows with Dairy Swiss bulls**4.5.1 The breeding system**

Crossbreeding ✓

(1)

4.5.2 Reason for crossbreeding

Two different/unrelated breeds were used ✓

(1)

4.5.3 TWO advantages of crossbreeding from the case study

- An improvement in the growth rate of the calves ✓
- Offspring were better adapted to hot conditions ✓
- Udders and legs improved ✓

(Any 2)

(2)

4.5.4 Differentiation**Inbreeding**

Mating of animals that are related to one another ✓

(1)

Line breedingMating of animals that are closely related to an outstanding ancestor/
bull ✓

(1)

4.5.5 ONE example for each of the breeding systems**Inbreeding** - Father and daughter/son and mother/brother and sister ✓

(1)

Line breeding - A bull with heifers from the second generation ✓

(1)

4.6 Genetically modified organisms**4.6.1 TWO potential risks of genetically modified crops to the environment**

- Can produce super weeds ✓
- Insect resistant plants can kill beneficial insects ✓
- Use of excessive amounts of herbicides may damage the soil ✓
- Loss of biodiversity/useful plants can be destroyed ✓
- Reduce the effectiveness of herbicides/pesticides ✓

(Any 2)

(2)

4.6.2 TWO benefits of genetically modified crops

- Environmental benefits ✓
- Health benefits ✓
- Economic benefits ✓

(Any 2)

(2)

[35]

TOTAL SECTION B: 105
GRAND TOTAL: 150