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Province of the  
**EASTERN CAPE**  
EDUCATION

**NATIONAL  
SENIOR CERTIFICATE**

**GRADE 12**

**SEPTEMBER 2021**

**AGRICULTURAL SCIENCES P2  
MARKING GUIDELINE**

**MARKS: 150**

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This marking guideline consists of 10 pages.

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

1.1	1.1.1	C ✓✓		
	1.1.2	A ✓✓		
	1.1.3	B ✓✓		
	1.1.4	D ✓✓		
	1.1.5	A ✓✓		
	1.1.6	C ✓✓		
	1.1.7	D ✓✓		
	1.1.8	C ✓✓		
	1.1.9	C ✓✓		
	1.1.10	B ✓✓	(10 x 2)	(20)
1.2	1.2.1	D ✓✓		
	1.2.2	E ✓✓		
	1.2.3	A ✓✓		
	1.2.4	C ✓✓		
	1.2.5	F ✓✓	(5 x 2)	(10)
1.3	1.3.1	Codominance ✓✓		
	1.3.2	Atavism ✓✓		
	1.3.3	Cash flow ✓✓		
	1.3.4	Price fixing ✓✓		
	1.3.5	Budget ✓✓	(5 x 2)	(10)
1.4	1.4.1	Variation ✓		
	1.4.2	Selling ✓		
	1.4.3	Seasonal ✓		
	1.4.4	Balance sheet ✓		
	1.4.5	Capital ✓	(5 x 1)	(5)

**TOTAL SECTION A: 45**

**SECTION B**

**QUESTION 2: AGRICULTURAL MANAGEMENT AND MARKETING**

2.1 2.1.1 **Condition that exists on the market at R5**  
Market equilibrium ✓ (1)

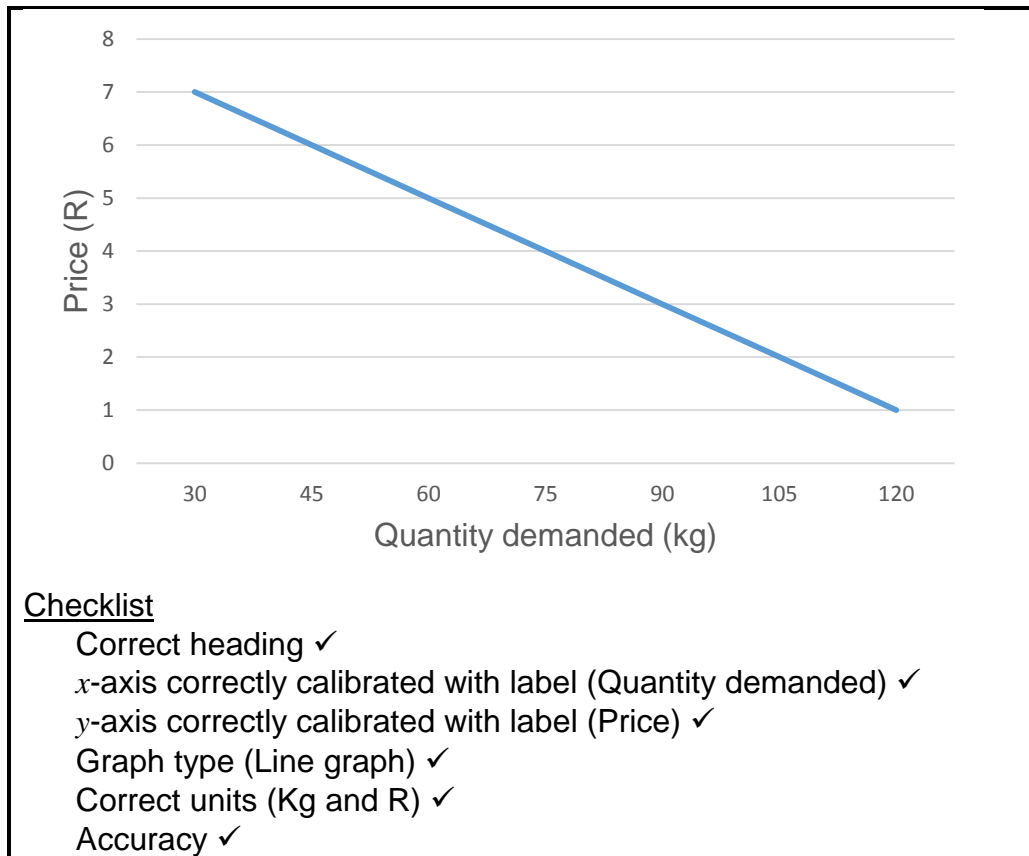
2.1.2 **Law of supply from the table**  
The higher the price ✓ the higher the quantity supplied ✓ (2)

2.1.3 **TWO factors that could have affected the demand of peaches**

- Changes in consumer preferences ✓
- Number of consumers on the market ✓
- Festive seasons ✓
- Complementary products ✓
- Availability of substitutes ✓

(Any 2 x 1) (2)

2.1.4 **Line graph showing the demand of peaches**



2.2 2.2.1 **Caption for the diagram**  
Marketing chain / Agri-business chain ✓ (1)

2.2.2 **Labels for A and B**  
A – Supply chain ✓  
B – Demand chain ✓ (2)

- 2.2.3 **THREE marketing functions in the diagram**
- Transport ✓
  - Storage ✓
  - Processing ✓
- (3)
- 2.2.4 **TWO ways of streamlining the agri-business chain**
- Improving road infrastructure ✓
  - Improving access to market information ✓
  - Marketing collectively ✓
  - Processing products close to where they are produced ✓
  - Using cold storage and refrigerated trucks ✓
  - Grading and standardisation of products ✓
- (Any 2 x 1) (2)
- 2.3 2.3.1 Exporters and importers ✓ (1)
- 2.3.2 Brokers ✓ (1)
- 2.3.3 Consumers ✓ (1)
- 2.3.4 Food processing companies ✓ (1)
- 2.3.5 Retailers ✓ (1)
- 2.4 2.4.1 **The marketing channel illustrated**  
Stock sales ✓ (1)
- 2.4.2 **Marketing system associated with the marketing channel**  
Free marketing ✓ (1)
- 2.4.3 **Motivation for use of the channel above by the farmers**
- Payment is guaranteed ✓
  - Seller has access to a wider market than the local one ✓
- (2)
- 2.4.4 **TWO other marketing channels available to the farmers**
- Internet marketing ✓
  - Direct marketing ✓
  - Farm gate marketing ✓
  - Fresh produce marketing ✓
- (Any 2 x 1) (2)
- 2.5 2.5.1 **Definition of a business plan**  
It is a document ✓ that describes a business you want to start and states what its goals and objectives are. ✓ (2)

**2.5.2 TWO important aspects of a business plan**

- Secure funding ✓
- To guide daily operations ✓
- To determine financial needs ✓
- To test the feasibility of a business idea ✓
- To allow the entrepreneur to foresee problems ✓
- To reposition/analyse the business ✓
- To gain knowledge about marketing opportunities and competitors ✓
- To ensure effective business management ✓
- Mapping out the objectives/goals of the enterprise ✓
- Provides information on the internal/external business environment ✓
- Provision of time frames ✓

(Any 2 x 1) (2)

**2.5.3 ONE example of an entrepreneurial success factor**

- Leadership ✓
- Risk-taking ✓
- Perseverance ✓
- Motivation ✓
- Market driven ✓

(Any 1 x 1) (1)

**[35]**

**QUESTION 3: PRODUCTION FACTORS**

- 3.1 3.1.1 **Definition of land**  
An area of ground ✓ used for farming and agricultural production. ✓ (2)
- 3.1.2 **Identification of economic functions of land shown in diagrams A and B.**  
**A** – Land provides physical space needed for production processes. ✓  
**B** – Land provides physical space where the farmer produces products. ✓ (2)
- 3.1.3 **TWO economic characteristics of land as a production factor**
- Land is limited. ✓
  - Urban development affects land availability. ✓
  - The value of land appreciates over time. ✓
  - Land is indestructible. ✓
  - The production capacity of land varies widely. ✓
  - Land is subject to the law of diminishing returns. ✓ (Any 2 x 1) (2)
- 3.1.4 **TWO measures a farmer can take to improve the productivity of land B**
- Consolidation of uneconomic farming units ✓
  - Use of scientific farming methods ✓
  - Water management ✓
  - Use of farming methods that are suited to the area ✓ (Any 2 x 1) (2)
- 3.2 3.2.1 **Problem associated with labour described in the passage**  
HIV/AIDS ✓ (1)
- 3.2.2 **TWO measures farmers can take to address the problem identified in QUESTION 3.2.1.**
- Awareness campaigns ✓
  - Providing access to condoms ✓
  - Ensuring access to treatment (STI's) and anti-retroviral drugs through government programmes. ✓
  - Nutritional schemes ✓
  - Avoid multiple partners ✓
  - Support groups ✓ (Any 2 x 1) (2)
- 3.2.3 **TWO other problems associated with labour**
- High cost of labour ✓
  - Limited education ✓
  - Availability of labour ✓
  - Strikes ✓
  - Abuse of alcohol and drugs ✓ (Any 2 x 1) (2)

- 3.2.4 **TWO strategies that can be used by farmers to improve labour productivity**
- Motivating labourers ✓
  - Having the right type and number of labourers ✓
  - Upskilling/training the workforce ✓
  - Provision of adequate living conditions ✓ (Any 2 x 1) (2)
- 3.3 3.3.1 **Identification of budget**  
Enterprise budget ✓ (1)
- 3.3.2 **An example of a variable cost**
- Seed ✓
  - Fertiliser and lime ✓
  - Machinery fuel ✓
  - Labour costs ✓
  - Harvesting ✓ (Any 1 x 1) (1)
- 3.3.3 **Justification of answer to QUESTION 3.3.2**  
The cost above increases ✓ with the level of production. ✓ (2)
- 3.3.4 **Calculation of profit/loss**  
Profit = Income – Expenses ✓  
**OR**  
= R2 100 – (R100+R700+R100+ R600+R450+R100+  
R300+R200+R100) ✓  
= R2 100 – R2 650 ✓  
= - R550 ✓ **OR** Loss of R550 (3)
- 3.3.5 **Deduction of enterprise viability**  
The enterprise is not viable ✓ due to the loss ✓ (2)
- 3.4 3.4.1 **Identification of farm record**  
Farm inventory ✓ (1)
- 3.4.2 **Importance of an inventory list**  
Allows the farm to track available assets for insurance purposes ✓ or  
to determine if equipment may need to be repaired ✓  
To track equipment loss to natural disasters or theft ✓ (Any 1 x 1) (1)
- 3.4.3 **Type of capital in the document**  
Movable capital ✓ (1)
- 3.4.4 **Problem associated with capital that is unique to movable capital**  
Depreciation ✓ (1)



**3.4.5 TWO methods used to create capital**

- Savings ✓
- Production ✓
- Credit/grants ✓

(Any 2 x 1) (2)

**3.5 3.5.1 Internal and external forces affecting the company in the passage above.**

Internal force – skilled workforce ✓ / aging equipment ✓  
External force – increased competition ✓

(2)

**3.5.2 Type of risk faced by the company**

Market and price risk ✓

(1)

**3.5.3 Explanation of how the internal and external forces lead to the risk mentioned in QUESTION 3.5.2.**

Increased competition and aging equipment will result in the company's products being more expensive than that of the competitors ✓ resulting in low sales. ✓

(2)

**[35]**

**QUESTION 4: BASIC AGRICULTURAL GENETICS**4.1 4.1.1 **Punnet square**

	R	r	✓
R	Rr	Rr	
r ✓	Rr	rr	✓

✓

Rubric

Punnet square with gametes and offspring genotypes ✓

Correct male gametes ✓

Correct female gametes ✓

Correct offspring genotype ✓

(4)

4.1.2 **Genotypic ratio**

3 Rr : 1 rr ✓

(1)

4.1.3 **Probability of spherical seeds being produced** $\frac{3}{4} \times 100$  ✓

75 ✓ % ✓

(3)

4.1.4 **Type of dominance and reason**

Complete dominance ✓ Only one characteristic was expressed in heterozygote offspring ✓

(2)

4.1.5 **Deduction whether seed shape is qualitative or quantitative**

Qualitative ✓

(1)

4.1.6 **Motivation for answer to QUESTION 4.1.5.**

The characteristic is controlled by a gene pair. ✓

(1)

4.2 4.2.1 **Identification of mutation type**

Chromosomal mutation ✓

(1)

4.2.2 **Identification of mutation types**

B – Duplication ✓

C – Inversion ✓

D – Translocation ✓

(3)

4.2.3 **Importance of variation**

• It is the basis for selection ✓

• It is used to improve crop varieties and livestock breeds ✓

(2)

4.2.4 **An example of a physical mutation agent**

Radiation/Gamma rays/X-rays/alpha particles ✓

(1)

4.3	4.3.1	<b>Identification of animal C</b> Mule ✓	(1)
	4.3.2	<b>Identification of breeding system</b> Species crossing ✓	(1)
	4.3.3	<b>Motivation of answer to QUESTION 4.3.1 above</b> Involves mating of animals ✓ of different species ✓	(2)
	4.3.4	<b>TWO benefits of animal C over animal A</b> Animal C is more disease and pest resistant than animal A ✓ Animal C is more hardy/resistant to extreme environmental conditions than animal A ✓	(2)
	4.3.5	<b>TWO disadvantages of breeding method depicted above</b> <ul style="list-style-type: none"> <li>• It is of little practical importance since only few animal species can interbreed ✓</li> <li>• Products of species crossing are infertile ✓</li> </ul>	(2)
4.4	4.4.1	<b>Identification of plant improvement method</b> Genetic engineering/Genetic modification ✓	(1)
	4.4.2	<b>ONE advantage of this technology that is mentioned in the passage</b> Improve crop productivity/food security ✓	(1)
	4.4.3	<b>TWO advantages of genetic engineering over traditional plant improvement methods</b> <ul style="list-style-type: none"> <li>• They are faster ✓</li> <li>• They are more precise ✓</li> <li>• They are not limited to individuals of the same species ✓</li> </ul>	(Any 2 x 1) (2)
	4.4.4	<b>TWO current applications of GM technology in plants</b> <ul style="list-style-type: none"> <li>• Development of disease resistant plants ✓</li> <li>• Development of herbicide resistant plants ✓</li> <li>• Longer shelf life ✓</li> <li>• Improved nutritional content ✓</li> </ul>	(Any 2 x 1) (2)
	4.4.5	<b>TWO potential human health risks of GMO</b> <ul style="list-style-type: none"> <li>• Allergies ✓</li> <li>• Unknown effects on human life ✓</li> <li>• Food safety concerns ✓</li> </ul>	(Any 2 x 1) (2)
			<b>[35]</b>
<b>TOTAL SECTION B:</b>			<b>105</b>
<b>GRAND TOTAL:</b>			<b>150</b>