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

## **SENIOR CERTIFICATE EXAMINATIONS/ NATIONAL SENIOR CERTIFICATE EXAMINATIONS**

**AGRICULTURAL SCIENCES P2**

**2019**

**MARKING GUIDELINES**

**MARKS: 150**

**These marking guidelines consist of 11 pages.**

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

1.1	1.1.1	B ✓✓	(10 x 2)	(20)
	1.1.2	A ✓✓		
	1.1.3	B ✓✓		
	1.1.4	C ✓✓		
	1.1.5	A ✓✓		
	1.1.6	A ✓✓		
	1.1.7	C ✓✓		
	1.1.8	B ✓✓		
	1.1.9	D ✓✓		
	1.1.10	D ✓✓		
1.2	1.2.1	F ✓✓	(5 x 2)	(10)
	1.2.2	G ✓✓		
	1.2.3	B ✓✓		
	1.2.4	H ✓✓		
	1.2.5	A ✓✓		
1.3	1.3.1	Surplus/oversupply/overproduction ✓✓	(5 x 2)	(10)
	1.3.2	Price fluctuation ✓✓		
	1.3.3	Genetics ✓✓		
	1.3.4	Prepotency ✓✓		
	1.3.5	Recessive gene ✓✓		
1.4	1.4.1	Equilibrium ✓	(5 x 1)	(5)
	1.4.2	Land ✓		
	1.4.3	Phenotype ✓		
	1.4.4	Internal ✓		
	1.4.5	Progeny ✓		
<b>TOTAL SECTION A:</b>				<b>45</b>

**SECTION B****QUESTION 2: AGRICULTURAL MANAGEMENT AND MARKETING****2.1 Marketing system**

- 2.1.1 **Identification of the marketing system**  
Co-operative ✓ (1)
- 2.1.2 **Types of co-operative marketing system**
- Services co-operatives ✓
  - Financial co-operatives ✓
  - Commercial/consumer co-operatives ✓
  - Production co-operatives ✓
  - Marketing co-operatives ✓
  - Purchasing co-operatives ✓ (Any 2) (2)
- 2.1.3 **Difference between Marketing**  
Long term strategy that involves all activities associated with production, pricing, promoting and distribution ✓ (1)  
**Selling** - Exchanging goods for cash ✓ (1)
- 2.1.4 **TWO problems hampering agricultural marketing chain of products**
- Perishability/spoilage ✓
  - Transportation ✓
  - Storage ✓
  - Poor infrastructure ✓
  - Accidents ✓
  - Lack of capital ✓
  - Lack of control over production ✓
  - Low value in relation to high volume ✓
  - Wide distribution of products ✓
  - Theft ✓
  - Seasonal changes/fluctuation ✓
  - Standardisation ✓
  - Competition ✓
  - Legislation ✓ (Any 2) (2)

**2.2 Demand of products in relation to price**

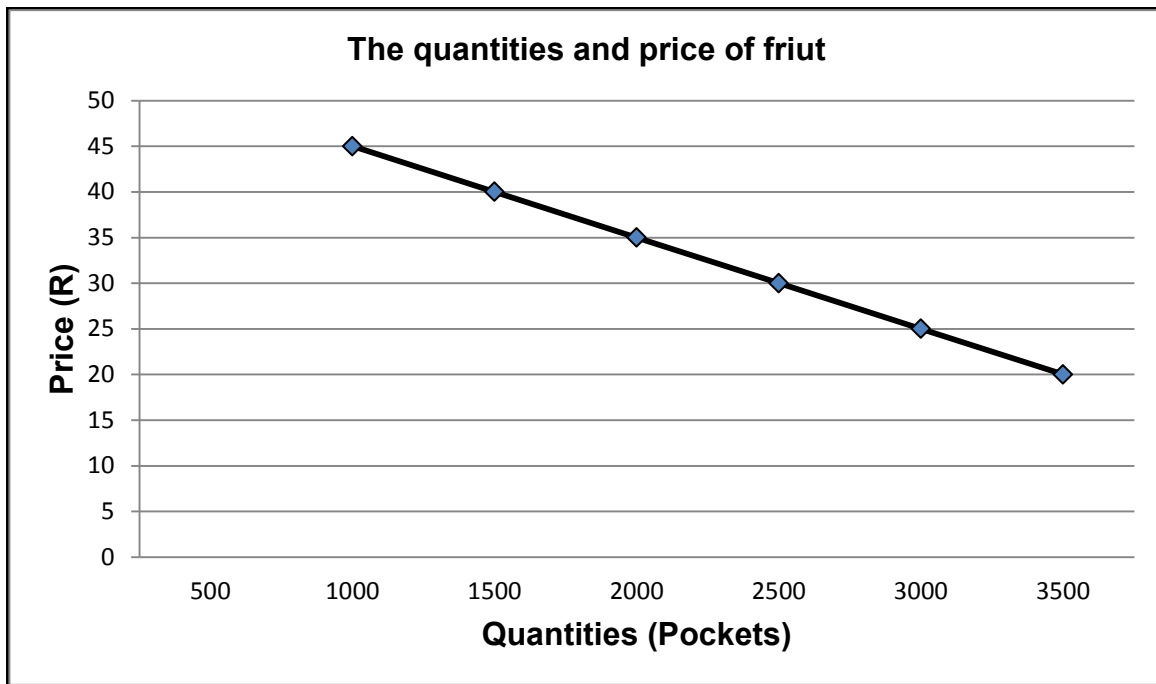
- 2.2.1 **Identification of the graphs**
- (a) Graph B ✓ (1)
- (b) Graph A ✓ (1)
- 2.2.2 **Justification of the answers**
- (a) **Graph B** - A change in price resulted in no/little change in demand ✓ (1)
- (b) **Graph A** - A change in price resulted in a huge change in demand ✓ (1)

**2.2.3 THREE other factors that may cause elasticity of demand**

- Nature of the produce ✓
- Availability of substitute products ✓
- Proportion of consumer's budget spent on the item ✓
- Time period ✓

(Any 3)

(3)

**2.3 Fruit sold at different quantities and prices****2.3.1 Line graph****Criteria/rubric/marketing guidelines**

- Correct heading ✓
- X-axis: Correctly calibrated with label (Quantities) ✓
- Y-axis: Correctly calibrated with label (Price) ✓
- Correct units (R and Pockets) ✓
- Line graph ✓
- Accuracy ✓

(6)

**2.3.2 Deduction of the relationship between the price and the quantity of fruit demanded**

The higher the price of the fruit ✓ the lower the quantities of fruit demanded ✓

**OR**

The lower the price of the fruit ✓ the higher the quantities of fruit demanded ✓

(Any 1)

(2)

**2.4 Business plan****2.4.1 TWO reasons for drawing up a business plan**

- To test the feasibility of the business ✓
- To check the economic viability ✓
- To determine the financial needs ✓
- To secure funding ✓
- To guide operations/outlines roles and responsibilities ✓
- Provides time frames ✓
- Provides information regarding the external/internal business environment ✓
- Ensuring effective business management ✓
- To gain knowledge about marketing opportunities/competitors ✓
- To reposition the business to deal with market changes ✓
- To allow a farmer to foresee problems/risk ✓
- Helps to define goals ✓
- Provides direction and focus ✓

(Any 2) (2)

**2.4.2 THREE items included in a format of a good business plan**

- Title/cover page ✓
- Summary of enterprise details/address/name ✓
- Summary of business plan/strategy/objectives ✓
- Overview/profile of the business/management team ✓
- Production plan ✓
- Management plan/time management plan ✓
- Sales and marketing plan ✓
- Financial plan ✓
- Reasons for success of business ✓
- Human resource plan ✓
- Organisational structure ✓
- SWOT analyses ✓
- Potential risks ✓

(Any 3) (3)

**2.4.3 TWO problems encountered when drawing up a business plan**

- Insufficient research ✓
- Too generic ✓
- Gaps/incomplete/too much information/vague ✓
- Insufficient technical details ✓
- Unrealistic assumptions/projections ✓
- Incomplete plan/financials ✓
- Not highlighting potential competition ✓
- Hiding weaknesses and risks ✓
- Using the incorrect format ✓
- Errors/not authentic ✓

(Any 2) (2)

**2.5 Entrepreneurship****2.5.1 Identification of the THREE phases of the entrepreneurial process**

- Identifying an opportunity ✓
- Research on what is needed/resource mobilisation ✓
- Production and profit making ✓

(3)

**2.5.2 THREE personal characteristics of a successful entrepreneur**

- Innovation/creativity ✓
- Confidence ✓
- Identify opportunity ✓
- Drive/passion/need for achievement ✓
- Perseverance ✓
- Leadership ✓
- Commitment ✓
- Hardworking ✓
- Motivation ✓
- Flexible ✓
- Market driven ✓
- Knowledgeable ✓
- Risk taker ✓
- Sound technical/operational knowledge ✓
- Interpersonal relations ✓
- Punctuality ✓

(Any 3)

(3)  
**[35]****QUESTION 3: PRODUCTION FACTORS****3.1 Land****3.1.1 Identification of the economic characteristic of land**

Law of diminishing return ✓

(1)

**3.1.2 The implication of the economic characteristic of land**

When land reaches its maximum point of production ✓ it cannot produce beyond its production potential ✓

(2)

**3.1.3 TWO ways a farmer can improve productivity of land**

- Improve soil fertility ✓
- Water management ✓
- Change in cropping practices and farming systems ✓
- Restoring land potential ✓
- Farm land more efficient/consolidation of uneconomic units ✓
- Adapt to scientific methods/technology ✓

(Any 2)

(2)

**3.1.4 THREE functions of land as a factor in agricultural production**

- Source of raw materials ✓
- Provides space ✓
- Food security ✓
- Source of minerals ✓
- Can be used as a collateral ✓

(Any 3)

(3)

**3.2 Labour****3.2.1 TWO types of labourers employed on farms**

- Permanent/full time ✓ (1)
- Temporary/part time ✓ (1)

**3.2.2 TWO main reasons for the loss of farm labour**

- Poor working conditions ✓
- Long working hours ✓
- Exposure to harsh conditions ✓
- Lack of career opportunities/education and training ✓
- Physically demanding ✓
- Poor wages ✓
- Poor living conditions ✓
- Industrial competition ✓ (Any 2) (2)

**3.2.3 TWO ways in which farmers retain their labourers**

- Provision of better working conditions ✓
- Reasonable working hours ✓
- Provision of career opportunities/promotion ✓
- Better/living wages ✓
- Provision of education/training/skills development ✓
- Provision of proper housing ✓
- Health schemes/benefits ✓
- Bonuses ✓
- Recognition for good work done ✓ (Any 2) (2)

**3.3 Labour legislation**

- 3.3.1 Skills Development Act (97 of 1998) ✓ (1)
- 3.3.2 Occupational Health and Safety Act (85 of 1993) ✓ (1)
- 3.3.3 Compensation for Occupational Injuries and Diseases Act (130 of 1993) ✓ (1)

**3.4 Financial record of an enterprise****3.4.1 Identification of the record**

Enterprise budget/budget ✓ (1)

**3.4.2 Reason**

Showing estimates of the expected income and expenditure of the enterprise ✓ (1)

**3.4.3 Calculation of the net income for this enterprise (with formula)**

Net income = Income – Expenditure ✓  
 = R77 500 – (R143 564 ✓) ✓  
 = – R 66 064 ✓ (4)

**3.4.4 Identification of the problem the enterprise could experience**

Loss/deficit/financial problems ✓ (1)



- 3.4.5 **TWO possible ways to make the enterprise viable**
- Reduce the costs ✓
  - Change to an enterprise with a lower running costs ✓
  - Sell at a higher price/better marketing ✓
- (Any 2) (2)

3.5 **Risk in a farming business**

- 3.5.1 **THREE types of risk in the farming industry**
- Technical/production ✓
  - Financial ✓
  - Market and price ✓
  - Political/policy risks ✓
- (Any 3) (3)
- 3.5.2 **Skill the manager needs in identifying the risks**
- Conceptual ✓
  - Analytical ✓
- (Any 1) (1)
- 3.5.3 **TWO strategies to reduce the impact of risk**
- Insuring against risks ✓
  - Risk sharing ✓
  - Diversification ✓
  - Processing/value adding ✓
  - Flexibility ✓
  - Future contracts/hedging ✓
- (Any 2) (2)
- 3.5.4 **THREE main principles for successful management**
- Planning ✓
  - Implementation ✓
  - Organisation ✓
  - Coordination ✓
  - Decision making ✓
  - Control ✓
- (Any 3) (3)  
**[35]**

**QUESTION 4: BASIC AGRICULTURAL GENETICS**

4.1 **Representation of the genotypes for different generations**

- 4.1.1 **Parent with red phenotype**
- Female ✓ (1)
- REASON**
- The parent with R for red colour/indicated by RR ✓ (1)
- 4.1.2 **Identification of the ratio's and phenotype**
- (a) 3 red : 1 black/3:1 ✓ (1)
- (b) 1:2:1 ✓ (1)
- (c) Red ✓ (1)

**4.2 Di-hybrid crossing****4.2.1 Traits that are being investigated**

- Hair colour ✓ (1)
- Length of hair ✓ (1)

**4.2.2 Genotype of a bull**

bb ✓ ll ✓ (2)

**4.3 Scenario on variation****4.3.1 Identification of the**

**(a) Genetic factor of variation - Genotype ✓** (1)

**(b) Environmental factor of variation - Feeding/nutrition ✓** (1)

**4.3.2 Relationship between feed restriction and average weight gain**

The higher the level of feed restrictions ✓  
the lower the average weight gain ✓

**OR**

The lower the level of feed restrictions ✓  
the higher the average weight gain ✓ (Any 1) (2)

**4.3.3 Hypothesis of this investigation**

There is no effect of genotype and feeding ✓  
on growth performance ✓

**OR**

Genotype and feeding ✓ reduce growth performance ✓

**OR**

Genotype and feeding ✓ increase growth performance ✓ (Any 1) (2)

**4.4 Breeding systems applied in cattle farming****4.4.1 Identification of the breeding systems**

- A** Crossbreeding ✓ (1)
- B** Inbreeding ✓ (1)

**4.4.2 Breeding system that promotes heterosis**

**A** ✓ (1)

**4.4.3 TWO disadvantages of inbreeding**

- Loss of vigour/performance/inbreeding depression ✓
- Loss of fertility ✓
- Genetic variation declines ✓
- Increase the lethal genes which can result in death ✓
- Reduced vitality ✓
- Fixation of undesired genes ✓
- Expert knowledge required ✓
- Less resistance to diseases ✓
- Poor adaptation to the environment ✓
- Undesirable characteristics can be bred into the offspring ✓
- Deformed animals ✓ (Any 2) (2)

4.4.4 **Letter of the breeding system**  
C ✓ (1)

#### 4.5 **Selection**

4.5.1 **Definition of selection**  
Process of choosing/identifying specific individuals ✓ for their  
desired characteristics/traits ✓ (2)

4.5.2 **Type of selection in nature**  
Natural ✓ (1)

4.5.3 **THREE characteristics selected for in animal production**  

- Growth ✓
- Health/disease resistance ✓
- Fertility ✓
- Body conformation ✓
- Production types ✓
- Breeding standards ✓

(Any 3) (3)

4.5.4 **Aspects to be improved through selection**  
 (a) Choosing animals with superior characteristics for breeding ✓ (1)  
 (b) Choosing animals that can adapt/produce in a specific area ✓ (1)

#### 4.6 **Genetic modification**

4.6.1 **TWO techniques used in the genetic modification process**  

- Micro-injection ✓
- Gene gun/Biolistics ✓
- Bacterial carriers/Agro-bacterium tumefaciens ✓
- Electroporation ✓
- Recombinant DNA ✓
- Calcium phosphate precipitation ✓
- Gene silencing ✓
- Gene splicing ✓
- Lipofection ✓
- Viral carriers ✓

(Any 2) (2)

4.6.2 **TWO disadvantages of genetically modified plants**  

- Health concerns/allergies ✓
- Not enough research has been done ✓
- Expensive ✓
- Super weeds develop/reduced effectiveness of pesticides ✓
- Religious/ethical beliefs ✓
- Reduced biodiversity ✓
- Gene transfer to non-target species ✓
- Possibility of mutations ✓

(Any 2) (2)

**4.6.3 TWO advantages of genetically modifying plants**

- Resistance to herbicides/insects/pests ✓
- Resistance to harsh environmental conditions ✓
- Plants have a lower water requirement ✓
- Improved quality/taste/flavour/nutritional value ✓
- Shelf life ✓
- Increased yields ✓

(Any 2) (2)  
**[35]**

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