



basic education

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 ✓		
TOTAL SECTION A:			45	

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)

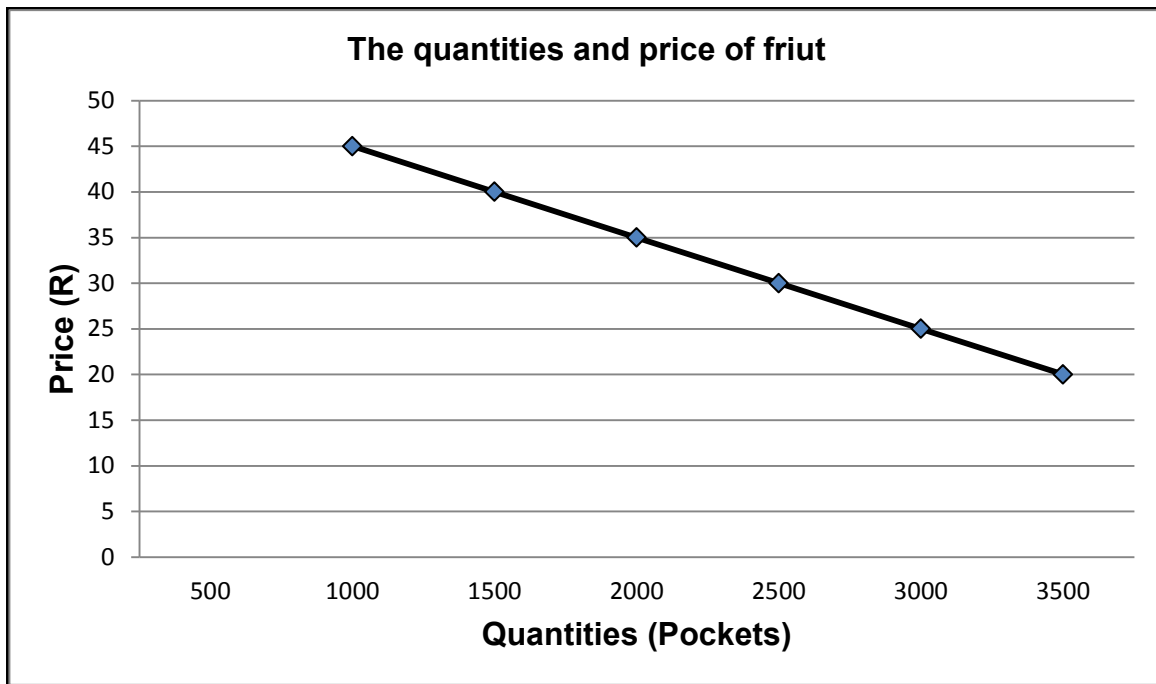
2.2.2 **Justification of the answers**

(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)
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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