



# basic education

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

## **NATIONAL SENIOR CERTIFICATE**

**GRADE 12**

**AGRICULTURAL SCIENCES P2**

**NOVEMBER 2017**

**MARKING GUIDELINES**

**MARKS: 150**

**These marking guidelines consist of 9 pages.**

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

1.1	1.1.1	C ✓✓		
	1.1.2	B ✓✓		
	1.1.3	C ✓✓		
	1.1.4	B ✓✓		
	1.1.5	A ✓✓		
	1.1.6	D ✓✓		
	1.1.7	A ✓✓		
	1.1.8	A ✓✓		
	1.1.9	D ✓✓		
	1.1.10	A/B ✓✓	(10 x 2)	(20)
1.2	1.2.1	D ✓✓		
	1.2.2	G ✓✓		
	1.2.3	A ✓✓		
	1.2.4	F ✓✓		
	1.2.5	H ✓✓	(5 x 2)	(10)
1.3	1.3.1	Balance sheet ✓✓		
	1.3.2	Collateral ✓✓		
	1.3.3	Heritability ✓✓		
	1.3.4	Incomplete dominance ✓✓		
	1.3.5	Monohybrid ✓✓	(5 x 2)	(10)
1.4	1.4.1	Research/survey ✓		
	1.4.2	Labour ✓		
	1.4.3	Atavism/throwback ✓		
	1.4.4	Genetic engineering/modification/manipulation/GM ✓		
	1.4.5	Silencing ✓	(5 x 1)	(5)
<b>TOTAL SECTION A:</b>			<b>45</b>	

**SECTION B****QUESTION 2: AGRICULTURAL MANAGEMENT AND MARKETING****2.1 Entrepreneurship****2.1.1 Entrepreneurial success factors**

- A - Organisational/coordination abilities ✓
- B - Technical/operational knowledge ✓
- C - Innovative/creativity/vision/insight ✓
- D - Perseverance ✓

(4)

**2.1.2 THREE resources required for starting a business**

- Financial ✓
- Human ✓
- Physical ✓

(3)

**2.2 Development of marketing****2.2.1 TWO functions of marketing**

- Packaging ✓
- Storage ✓
- Transportation ✓

(Any 2) (2)

**2.2.2 Marketing type**

Free marketing ✓

(1)

**2.2.3 Reason**The farmer will be selling direct to the consumers and wholesalers/  
no regulatory measures ✓

(1)

**2.2.4 TWO problems of free marketing**

- Competition ✓
- High marketing costs/marketing products/time spent expensive ✓
- Limited bargaining power ✓
- Over production/risk due to production decision ✓
- Price fluctuation ✓
- No regulations ✓

(Any 2) (2)

**2.3 Marketing process****2.3.1 Marketing process illustrated**

Marketing/supply-demand chain ✓

(1)

**2.3.2 The highest paying consumer**

Consumer C ✓

(1)

**2.3.3 TWO reasons for paying the high price**

- Processing cost ✓
- Transportation cost ✓
- Profit margins/intermediaries ✓
- Storage costs ✓

( Any 2) (2)

**2.3.4 TWO factors hampering marketing during transportation**

- Perishability/spoilage of the product ✓
- Accidents/physical damages ✓
- Bad roads limiting access to market ✓
- Theft ✓
- Bulkiness in relation to volume ✓
- Distance from the markets/wide distribution ✓
- Costs ✓
- Weather conditions/delays ✓

(Any 2) (2)

**2.4 Identification of the marketing approach**

2.4.1 Niche marketing ✓

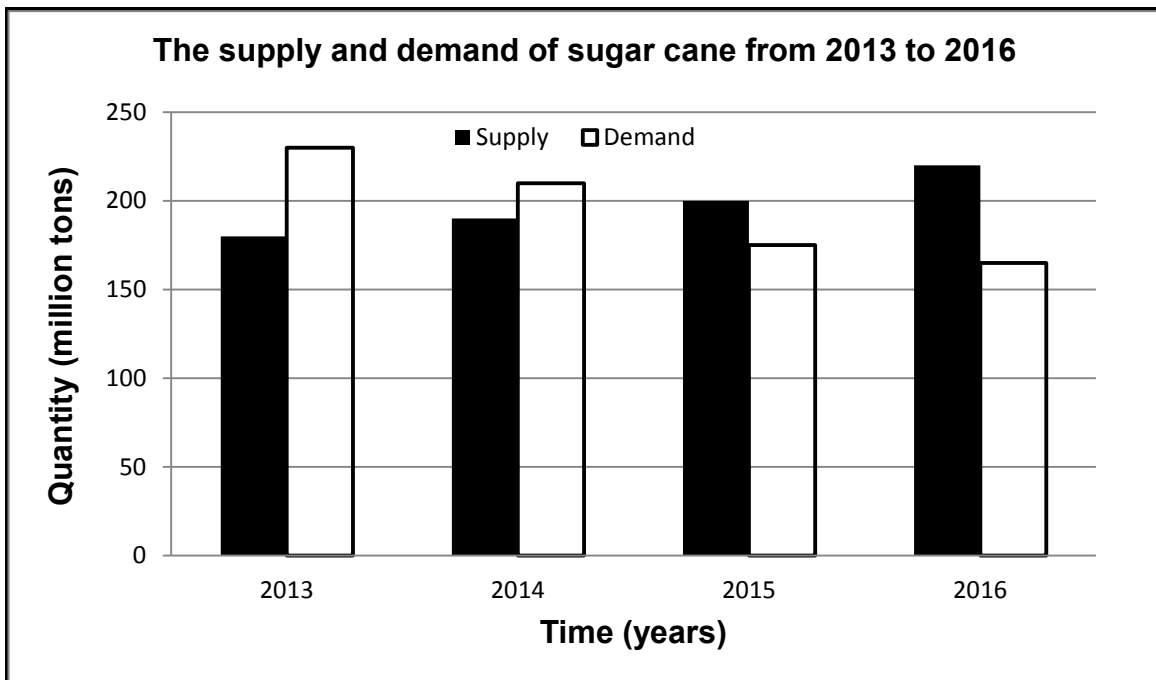
(1)

2.4.2 Multi-segment marketing ✓

(1)

**2.5 Bar graph on sugar cane production**

2.5.1 **A bar graph on the supply and demand of sugar cane from 2013 to 2016**



**Criteria/rubric/marketing guidelines**

- Correct heading ✓
- X-axis: Correctly calibrated and labelled (Time) ✓
- Y-axis: Correctly calibrated and labelled (Quantity) ✓
- Correct units (million tons and years) ✓
- Bar graph ✓
- Accuracy ✓

(6)

- 2.5.2 **TWO factors influencing the price of sugar cane**
- Supply ✓
  - Demand ✓
- (2)

2.6 **Business plan**

- 2.6.1 **Definition of a business plan**  
It is a document ✓ that describes a business the entrepreneur wants/is intending to start ✓
- (2)

- 2.6.2 **TWO reasons for drawing up a business plan**
- Test the feasibility and economic viability ✓
  - Determination of the financial needs/budgeting ✓
  - Guiding daily operations ✓
  - To foresee problems/mistakes ✓
  - Outlines the roles and responsibilities of people involved ✓
  - Provides guideline for decision making ✓
  - Identify opportunities ✓
  - Provide information on internal/external business environment/competitors ✓
  - It is a plan for capital requirements/secure funding ✓
  - Provides analysis of the business and its activities ✓
  - Also outlines time frames for completion of the tasks ✓ (Any 2) (2)

- 2.6.3 **TWO problems encountered when drawing up a business plan**
- Conducting insufficient research/survey ✓
  - Provision of too much unnecessary information/leaving gaps/being too vague ✓
  - Putting unrealistic assumptions/projections ✓
  - Not being able to identify the potential risks/hiding weaknesses/risks ✓
  - Committing budget and cash flow errors ✓
  - Use of incorrect format ✓ (Any 2) (2)
- [35]**

**QUESTION 3 : PRODUCTION FACTORS**

3.1 **Analysis of an advert**

- 3.1.1 **Indication of the position for placement in JOB 1**  
Position of a farm manager/manager ✓
- (1)

- 3.1.2 **TWO reasons JOB 1**
- Qualification needed for the job ✓
  - Analytical and conceptual skills required for the job ✓
  - Financial management skills needed for the job ✓ (Any 2) (2)

**3.1.3 Skills enabling candidate for JOB 1**

- (a) Analytical and conceptual skills ✓ (1)
- (b) Financial management skill ✓ (1)
- (c) Interpersonal skill ✓ (1)

**3.1.4 Type of temporary labourer for JOB 2**

Seasonal ✓ (1)

**3.1.5 Reason**

Needed to operate a harvester which is done seasonally ✓ (1)

**3.2 HIV infections of farm workers over thirteen years****3.2.1 The trend of HIV infections over years**

Infections increased from 1998 until reaching peak in 2007 ✓  
and decreased from 2007 to 2010 ✓ (2)

**3.2.2 Possible measures that might have resulted in trend after 2007**

- Provide awareness campaigns/education ✓
- Provision of access to condoms ✓
- Abstain from sex ✓
- Access to treatment to sexually transmitted disease ✓
- Support groups ✓ (Any 3) (3)

**3.2.3 THREE impacts of HIV on the productivity of farm workers**

- Workers become sick/production declines/deadlines not met ✓
- Lack of energy to complete tasks ✓
- Absenteeism amongst infected workers/planning becomes difficult ✓
- Loss of skills and experience ✓
- Impacts negatively on healthy workers ✓ (Any 3) (3)

**3.3 Measure to reduce labour problems**

3.3.1 Mechanisation/provision of leave/rest time/  
nutritional programmes/additional work force ✓ (1)

3.3.2 Provision of training/re-skilling ✓ (1)

**3.4 Scenario on capital****3.4.1 Type of capital from the scenario**

- Movable ✓
- Fixed ✓ (Any 1) (1)

- 3.4.2 **Calculation of the amount to be repaid after a year at 11,5%**
- $R340\ 000 - R180\ 000 = R160\ 000$  ✓
  - $R160\ 000 \times 11,5\% = R18\ 400$  ✓
  - $R160\ 000 + R18\ 400 = R178\ 400$  ✓ (3)
- 3.4.3 **Total income of the enterprise for THREE months**
- Sale of eggs =  $R12\ 000 \times 4 = R48\ 000 \times 3 = R144\ 000$  ✓
  - Total income =  $R144\ 000 + R105\ 000 = R249\ 000$  ✓ (2)
- 3.4.4 **TWO reasons to be able to repay the loan**
- The farmer is making a profit/surplus/R70 600 ✓
  - The expected income for three months will be R 249 000 ✓
  - A loan of R178 400 can be repaid even in 3 months ✓ (Any 2) (2)
- 3.5 **Strategic management**
- 3.5.1 **TWO reasons for developing a business strategy**
- To make business more profitable/more competitive ✓
  - To enable the manager to adapt to changes/challenges that might occur in future ✓ (2)
- 3.5.2 **The steps in strategic management**
- A - Developing business strategy/planning ✓
  - B - Mission ✓
  - C - Vision ✓
  - D - Goals and objectives ✓ (4)
- 3.6 **Scenario on land as a production factor**
- 3.6.1 **Method of increasing land productivity**
- Zero till /Water management ✓ (1)
- 3.6.2 **ONE adaptation measure used to increase the land productivity**
- No/zero till ✓ (1)
- 3.6.3 **A method to improve yields in the future**
- Breeding of drought resistant cultivars/GM/developing hybrids ✓ (1)

**[35]****QUESTION 4: BASIC AGRICULTURAL GENETICS**

- 4.1 **Illustration of incomplete dominance**
- 4.1.1 **Type of dominance**
- Incomplete dominance ✓ (1)
- 4.1.2 **Motivation on the type of dominance**
- The offspring inherited none of the colours of the parents/ (No parent is dominant) ✓ (2)
  - The offspring is grey/intermediate/neither black nor white ✓

**4.1.3 Completion of the missing answers**

- (a) WW ✓
  - (b) BB ✓
  - (c) W ✓
  - (e) B ✓
  - (g) BW/WB ✓
- (5)

**4.2 GMO crop****4.2.1 TWO benefits of GM crops**

- More productive/higher yields/improved commercial properties ✓
  - Resistant to maize stalk borer/pest hence reduce the use of harmful chemicals ✓
- (2)

**4.2.2 Genetic modification of maize plants**

DNA is extracted from the bacterium (*Bacillus thuringiensis*) ✓ transferred to a maize plant ✓ and the plant acquires resistance to maize stalk borer ✓

(3)

**4.2.3 Negative effect on the environment of GM crops**

- Creation of super weeds ✓
  - Possibility to create pesticides resistant insects ✓
  - Beneficial insects could be killed ✓
  - Reduce biodiversity ✓
- (Any 2) (2)

**4.3 Schematic representation of line breeding****4.3.1 TWO common ancestors of individuals S and D**

- 13 ✓
  - 5 ✓
  - 7 ✓
- (Any 2) (2)

**4.3.2 Benefits of upgrading to livestock farmers**

- A new breed is gradually imported into the herd ✓
  - Initial rapid results (50% improvement in first generation) ✓
  - Deformities/unwanted characteristics occur less frequent ✓
  - Economical way to raise the stock to a pedigree level ✓
  - Less expert knowledge required ✓
- (Any 2) (2)

**4.4 Scenario on variation****4.4.1 The genetic phenomenon**

Variation ✓

(1)

**4.4.2 TWO possible external causes of the phenomenon**

- Diseases/pests ✓
  - Nutrients/feeding ✓
  - Climate/temperature/rainfall ✓
  - Environmental/soil ✓
- (Any 2) (2)



4.4.3	<b>Importance of this phenomenon</b>	<ul style="list-style-type: none"> <li>• Assists in selecting parents with the desired characteristics ✓</li> <li>• Develop new cultivars/crop varieties ✓</li> </ul>	(Any 1)	(1)
4.5	<b>Breeding systems</b>			
4.5.1	<b>Suitable animal breeding system</b>	Cross breeding ✓		(1)
4.5.2	<b>Reason</b>	There are two breeds involved/Nguni and Hereford breeds ✓		(1)
4.5.3	<b>Motivation of the breeding system</b>	<ul style="list-style-type: none"> <li>• Leads to increased heterosis ✓</li> <li>• Hybrid vigour/ better performance ✓</li> <li>• Produces progeny that is hardy ✓</li> <li>• Resistant to diseases ✓</li> <li>• Progeny produce heavy early weaners ✓</li> <li>• Increase in the genetic variation ✓</li> </ul>	(Any 2)	(2)
4.5.4	<b>TWO disadvantages of inbreeding</b>	<ul style="list-style-type: none"> <li>• Leads to inbreeding depression ✓</li> <li>• Increases the expression of lethal genes ✓</li> <li>• Leads to deformed offspring ✓</li> <li>• Causes the loss of genetic variation ✓</li> </ul>	(Any 2)	(2)
4.6	<b>Estimated Breeding Value (EBV)</b>			
4.6.1	<b>TWO characteristics for selection</b>	<ul style="list-style-type: none"> <li>• Birth weight ✓</li> <li>• Slaughter weight ✓</li> </ul>		(2)
4.6.2	<b>TWO reasons</b>	<ul style="list-style-type: none"> <li>• Accuracy percentage is higher in both ✓</li> <li>• Characteristics are highly reliable ✓</li> <li>• Heritability is also high in both ✓</li> </ul>	(Any 2)	(2)
4.6.3	<b>TWO importance of the Estimated Breeding Value</b>	<ul style="list-style-type: none"> <li>• The prediction of the performance of the progeny for a particular characteristic ✓</li> <li>• Indicate the characteristic to select for based on performance ✓</li> <li>• Help to estimate the rate of genetic progress in the breeding programme ✓</li> </ul>	(Any 2)	(2)
				<b>[35]</b>
			<b>TOTAL SECTION B:</b>	<b>105</b>
			<b>GRAND TOTAL:</b>	<b>150</b>