



# basic education

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

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

**AGRICULTURAL SCIENCES P2**

**2023**

**MARKING GUIDELINES**

**MARKS: 150**

**These marking guidelines consist of 10 pages.**

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

1.1	1.1.1	C ✓✓	(10 x 2)	(20)
	1.1.2	B ✓✓		
	1.1.3	D ✓✓		
	1.1.4	B ✓✓		
	1.1.5	A ✓✓		
	1.1.6	C ✓✓		
	1.1.7	D ✓✓		
	1.1.8	B ✓✓		
	1.1.9	A ✓✓		
	1.1.10	C ✓✓		
1.2	1.2.1	C ✓✓	(5 x 2)	(10)
	1.2.2	E ✓✓		
	1.2.3	B ✓✓		
	1.2.4	G ✓✓		
	1.2.5	A ✓✓		
1.3	1.3.1	Promotion/advertising ✓✓	(5 x 2)	(10)
	1.3.2	Labour productivity ✓✓		
	1.3.3	Quantitative ✓✓		
	1.3.4	Heterozygous ✓✓		
	1.3.5	Environmental ✓✓		
1.4	1.4.1	Cooperative ✓	(5 x 1)	(5)
	1.4.2	Inventory ✓		
	1.4.3	Segregation ✓		
	1.4.4	Natural ✓		
	1.4.5	Heritability ✓		
<b>TOTAL SECTION A:</b>			<b>45</b>	

**SECTION B****QUESTION 2: AGRICULTURAL MANAGEMENT AND MARKETING****2.1 Marketing channels****2.1.1 Identification of the following**

- (a) **Marketing system** - Free marketing ✓ (1)  
(b) **Marketing channel** - Direct/contract marketing ✓ (1)

**2.1.2 Indication of the letter**

- (a) D ✓ (1)  
(b) B ✓ (1)

**2.1.3 TWO disadvantages of a free marketing system**

- Farmers are likely to experience price fluctuations ✓
- High marketing/production costs ✓
- The producer has a limited bargaining power ✓
- The producer runs a risk because wrong production decisions may lead to a greater financial loss ✓
- Producers may set the price artificially ✓
- There is a risk of product rejection if it is not accepted by consumers ✓
- Cartels are formed and consumers/other suppliers are exploited ✓
- Over production can lead to big surplus ✓
- Farmers may lack the necessary skills ✓
- Farmers bear all the risk alone ✓
- Small scale farmers struggle to keep up production as they focus on marketing ✓
- Competition is high for individual farmers ✓ (Any 2) (2)

**2.2 Price elasticity and inelasticity****2.2.1 Identification of the product**

- (a) **Inelastic** - Product B ✓ (1)  
(b) **Elastic** - Product A ✓ (1)

**2.2.2 Reason for inelasticity**

The change in price ✓ has little influence on the quantity of product demanded ✓ (2)

**2.2.3 TWO factors that resulted in price elasticity of product**

- Nature of the product ✓
- Availability of substitute products ✓
- Consumers income ✓
- Fuel costs ✓
- Time period/seasonality ✓
- Price ✓ (Any 2) (2)

## 2.3 Marketing problems

### 2.3.1 Deduction of the problem

- (a) **Picture A** - Wide distribution of production areas and distance to markets/poor infrastructure/accidents/theft/delays/transportation costs ✓ (1)
- (b) **Picture B** - Perishability/spoilage/storage costs ✓ (1)

### 2.3.2 How the problem of transportation can be addressed

- Improving road infrastructure ✓
- Provision of security ✓
- Insurance ✓
- Production closer to markets ✓ (Any 1) (1)

### 2.3.3 Cost factor aligned to picture B

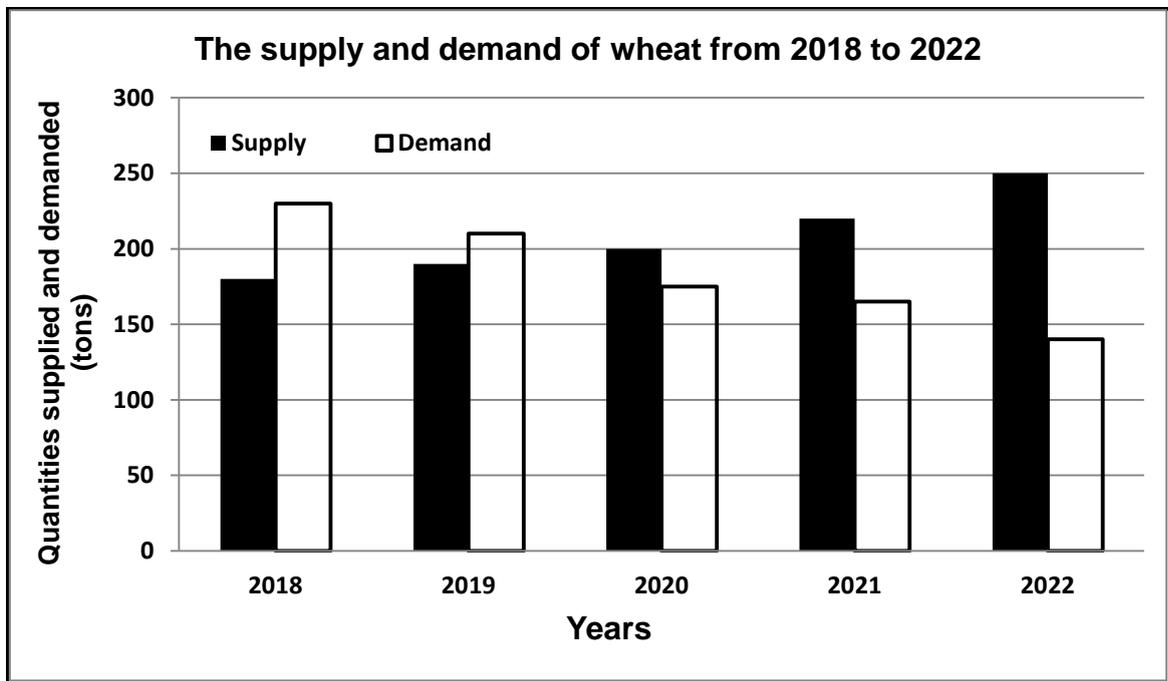
- Supply of energy/electricity/storage costs ✓ (1)

### 2.3.4 TWO roles of legislation in the effective marketing

- Promoting/optimising efficient marketing of products ✓
- Increasing market accessibility to all participants ✓
- Enhancing the viability of agricultural sector ✓
- Controls the sale and export of certain agricultural products ✓
- Promotes meat safety at abattoirs ✓
- Controls the export of perishable products from South Africa ✓
- Promotes a fair/sustainable market place for consumer products and services ✓ (Any 2) (2)

## 2.4 Supply and demand of wheat

### 2.4.1 A bar graph showing the supply and demand of wheat from 2018 to 2022



#### CRITERIA/RUBRIC/MARKING GUIDELINES

- Correct heading ✓
- X-axis: correctly calibrated with label (Years) ✓
- Y-axis: correctly calibrated with label (Quantities supplied and demanded) ✓
- Correct unit (tons) ✓
- Bar graph ✓
- Accuracy (80% + correctly plotted) ✓ (6)

#### 2.4.2 Deduction of trends

- (a) **Supply** - Quantities supplied increased from 180 tons (2018) to 250 tons (2022) ✓ (1)
- (b) **Demand** - Quantities demand decreased from 230 tons (2018) to 140 tons (2022) ✓ (1)

## 2.5 Entrepreneurship

### 2.5.1 TWO phases of entrepreneurship in the scenario

- Identification of a business opportunity ✓
- Determining the resources required/resource mobilization ✓
- Starting the business ✓ (Any 2) (2)

### 2.5.2 Marketing function

Processing ✓ (1)

### 2.5.3 Advantage of processing

It provides job/skill opportunities ✓ (1)

**2.6 SWOT analysis****2.6.1 Purpose of SWOT analysis**

It helps to evaluate the business ✓

(1)

**2.6.2 Identification of the letter****(a)** C ✓

(1)

**(b)** B ✓

(1)

**(c)** A ✓

(1)

**(d)** D ✓

(1)

**[35]****QUESTION 3: PRODUCTION FACTORS****3.1 Production factors****3.1.1 The production factor****(a)** Land/C ✓

(1)

**(b)** Capital/A ✓

(1)

**(c)** Management/B ✓

(1)

**3.1.2 Justification of the answer in 3.1.1 (a)**

- The value of land appreciates ✓
- Easy to sell/transfer/convert ✓

(Any 1)

(1)

**3.2 Land****3.2.1 The economic characteristic of land**

Land for agricultural purposes is scarce/limited/limitedness ✓

(1)

**3.2.2 TWO functions associated with land**

- Provides space for agricultural production/activities ✓
- Provides food for humans/feeding for animals ✓

(2)

**3.3 HIV/AIDS and its negative impact on productivity****3.3.1 TWO implications of HIV/AIDS on the agricultural sector**

- Productivity will decrease ✓
- Knowledge/experience/skills are lost ✓
- Makes planning difficult ✓

(Any 2)

(2)

**3.3.2 A measure that can be taken by a farmer to address HIV/AIDS**

- Awareness campaigns/education ✓
- Access to anti-retroviral medication ✓
- Access to treatment to STD's ✓
- Education in acceptable moral behaviour ✓
- Access to condoms ✓
- Establish support groups ✓

(Any 1)

(1)

### 3.4 Labour

#### 3.4.1 The types of farm workers

- (a) **Casual worker** - Brick-layer ✓ (1)  
 (b) **Manager** - Dairy foreman ✓ (1)  
 (c) **Unskilled worker** - General workers ✓ (1)  
 (d) **Skilled worker** - Electronic feeding machine operator/brick layer ✓ (1)

#### 3.4.2 The legislation/Act that regulates the following

- (a) Compensation for Occupational Injuries and Diseases Act/COIDA (Act 130 of 1993) ✓ (1)  
 (b) Unemployment Insurance Act/UIA (Act 66 of 2001) ✓ (1)  
 (c) Basic Conditions of Employment Act/BCEA (Act 75 of 1997) ✓ (1)

### 3.5 Budget

#### 3.5.1 The type of budget

Enterprise budget ✓ (1)

#### 3.5.2 Calculation of the profit/loss

$$\begin{aligned} \text{Profit/loss} &= \text{Total income} - \text{Total expenditure} \checkmark \\ &= \text{R197 500} \checkmark - \text{R143 500} \checkmark \\ &= \text{R54 000} \checkmark \end{aligned} \quad (4)$$

#### 3.5.3 Indication of whether the farmer should continue or not with the enterprise

The farmer should continue ✓ (1)

#### 3.5.4 Reason for the answer

The enterprise made a profit of R54 000 ✓ (1)

### 3.6 Capital

#### 3.6.1 Identification of the curves

- (a) **Movable capital assets** - A ✓ (1)  
 (b) **Fixed capital assets** - B ✓ (1)

#### 3.6.2 Reason

The value of the fixed assets appreciates ✓ (1)

#### 3.6.3 TWO problems of capital

- Depreciation ✓
- Scarcity/shortage of capital ✓
- Expensive/high cost ✓
- Over-capitalization ✓
- Under-capitalization ✓
- Risk factor ✓
- High interest rate/interest rate may change ✓ (Any 2) (2)

### 3.7 Management

#### 3.7.1 TWO types of risks

- Internal ✓
- External ✓

(2)

#### 3.7.2 TWO sources of risks

- Technical risks ✓
- Market and price risks ✓
- Financial risks ✓
- Legal risks ✓
- Production risks ✓

(Any 2)

(2)

#### 3.7.3 TWO risk management strategies

- Diversification ✓
- Risk sharing ✓

(2)

**[35]**

## QUESTION 4: BASIC AGRICULTURAL GENETICS

### 4.1 Crossing

#### 4.1.1 The pattern of inheritance

Incomplete dominance ✓

(1)

#### 4.1.2 Justification

The F<sub>1</sub> offspring have intermediate characteristic ✓

(1)

#### 4.1.3 Labelling

(a) 1 - Meiosis ✓

(1)

(b) 2 - BW ✓

(1)

(c) 3 - Black ✓

(1)

#### 4.1.4 F<sub>1</sub> and F<sub>2</sub> ratio's

(a) Genotypic ratio - 1 or 4 ✓

(1)

(b) Phenotypic ratio - 1 black : 2 grey : 1 white ✓

(1)

### 4.2 Variation

#### 4.2.1 Identification of the phenomenon

Variation ✓

(1)

#### 4.2.2 THREE environmental causes of variation

- Nutrition ✓
- Rainfall/water supply ✓
- Soil factors ✓
- Temperature ✓
- Topography ✓
- Light intensity ✓
- Diseases/pests ✓

(Any 3)

(3)

4.3 **Matching of the mutagenic agents**

- (a) Chemical ✓ (1)
- (b) Physical ✓ (1)
- (c) Biological ✓ (1)

4.4 **Selection and breeding**4.4.1 **Indication of the most accurate method**

Pedigree selection ✓ (1)

4.4.2 **ONE other method to select animals**

- Mass selection ✓
- Progeny selection ✓
- Family selection ✓ (Any 1) (1)

4.4.3 **ONE importance of variation**

- Variation is the basis for selection ✓
- Helps animals to adapt to the changing environment ✓
- Used to improve crop varieties and livestock breeds ✓
- For the development of new cultivars/breeds ✓ (Any 1) (1)

4.4.4 **Differentiation between inbreeding and cross-breeding**

- Inbreeding is the crossing of closely related animals ✓
- Cross-breeding is the crossing of non-related animals ✓ (2)

4.5 **Punnett Square**

4.5.1

Gametes	B	b
b	Bb	bb
b	Bb	bb

**MARKING RUBRIC**

- Correct gametes of parent one ✓
- Correct gametes of parent two ✓
- Correct genotypes of the offspring ✓
- Punnet Square (populated with gametes and offspring) ✓ (4)

4.5.2 **Calculation of the percentage of black-furred goats**

- =  $\frac{2}{4} \times 100$  ✓
- = 50% ✓ (2)

4.6 **Patterns of inheritance**4.6.1 **The pattern of inheritance**

Polygenic inheritance ✓ (1)

4.6.2 **Reason**

The length of mohair is controlled by more than one pair of genes ✓ (1)

4.6.3 **Calculation of the length of mohair**

- AABb length = 25 cm + 3 cm + 3 cm + 3 cm ✓
- = 34 cm ✓

(2)

4.6.4 **Another genotype that gives rise to 34 cm**

AaBB ✓

(1)

4.7 **Genetic modification**4.7.1 **Definition**

Genetic modification is the technique of changing/manipulation of the genetic characteristics of an organism ✓ by inserting the genes from another organism into its DNA ✓

(2)

4.7.2 **TWO aims of genetic modification**

- Improving the yield ✓
- Improve the tolerance to environmental conditions ✓
- Improve the resistance to pests, diseases and weeds ✓
- Improve the flavour and shelf-life of produce ✓
- Increasing the nutritional value of crops/animal products ✓
- Producing pharmaceutical crops/develop new vaccines/medicines ✓
- Develop animal models for studies of diseases ✓
- Increasing genetic diversity ✓

(Any 2)

(2)

4.7.3 **ONE advantage of genetic modification over traditional method**

- It is precise ✓
- It is fast ✓
- Not limited to organisms of the same species ✓

(Any 1)

(1)

**[35]**

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