basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

SENIOR CERTIFICATE EXAMINATIONS/ NATIONAL SENIOR CERTIFICATE EXAMINATIONS

AGRICULTURAL SCIENCES P2

MAY/JUNE 2026

MARKING GUIDELINES

MARKS: 150

These marking guidelines consist of 12 pages.

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SECTION A

QUESTION 1

1.1	1.1.1	D ✓✓		
	1.1.2	D ✓✓		
	1.1.3	B ✓✓		
	1.1.4	B ✓✓		
	1.1.5	A ✓✓		
	1.1.6	C ✓✓		
	1.1.7	B ✓✓		
	1.1.8	A ✓✓		
	1.1.9	D ✓✓		
	1.1.10	C ✓✓	(10 x 2)	(20)
1.2	1.2.1	C ✓✓		
	1.2.2	H ✓✓		
	1.2.3	A ✓✓		
	1.2.4	I ✓✓		
	1.2.5	G ✓✓	(5 x 2)	(10)
1.3	1.3.1	Intermediaries/middlemen/agents/brokers ✓✓		
	1.3.2	Skilled/semi-skilled labour ✓✓		
	1.3.3	Epistasis ✓✓		
	1.3.4	Heredity ✓✓		
	1.3.5	Estimated breeding value/EBV ✓✓	(5 x 2)	(10)
1.4	1.4.1	Entrepreneurship ✓		
	1.4.2	Inventory ✓		
	1.4.3	Qualitative ✓		
	1.4.4	Alleles ✓		
	1.4.5	Electroporation ✓	(5 x 1)	(5)

TOTAL SECTION A: 45

SECTION B

QUESTION 2: AGRICULTURAL MARKETING AND MANAGEMENT

2.1 Marketing functions

2.1.1 **Identification of the marketing functions in**
PICTURE A - Storage ✓ (1)
PICTURE D - Transport/transportation ✓ (1)

2.1.2 **ONE guideline for packaging**
- Provides information about the product/identification/labelling ✓
- Convenient for handling/containment ✓
- Biodegradable/recyclable ✓
- Free from health risks/chemicals/foreign objects ✓
- Protection against mechanical damage ✓ (Any 1) (1)

2.1.3 **TWO advantages of processing**
- Increases the value of the product ✓
- Higher income for farmers ✓
- Overcome over-supply of the product ✓
- Allows easier packaging and handling of product/easy to transport/convenience ✓
- Provides job opportunities ✓
- Ensures the availability of product throughout the year ✓
- Reduces spoilage/wastage/perishability ✓
- Longer shelf life ✓
- Ensures food security ✓
- Improved food safety ✓
- Makes the products more appealing to the consumer ✓ (Any 2) (2)

2.2 Elasticity of demand

2.2.1 **Indication of the form of elasticity**
(a) PICTURE B - Inelastic ✓ (1)
(b) PICTURE A - Elastic ✓ (1)

2.2.2 **Reason for the elasticity**
The change in price resulted in a huge change in demand ✓✓ (2)

2.2.3 **ONE factor that led to inelasticity**
- Nature/usefulness of the product/habitual consumption □
- Lack of alternatives/availability of products □
- Time period/season ✓
- Consumers income ✓ (Any 1) (1)

2.3 **Price determination**

2.3.1 **Identification of an equilibrium price**
R80 ✓ (1)

2.3.2 **Explanation of the relationship between price and the supply**
- The higher the price the higher the supply of mangoes ✓✓
- The lower the price the lower the supply of mangoes ✓✓
- The price and supply are proportionally related to one another ✓✓

(Any 1) (2)

2.3.3 **TWO factors affecting supply of mangoes**
- Price ✓
- Competitive products/number of producers ✓
- Environmental conditions/pests and diseases ✓
- Political instability ✓
- Expectations of future price change ✓
- Demand for the product ✓
- Technology ✓
- Research/knowledge of production ✓
- Production costs ✓
- Subsidies/taxation ✓
- Possibilities of increasing the supply of products ✓
- Seasonality of the product ✓
- Legislation ✓
- Infrastructure ✓

(Any 2) (2)

2.3.4 **TWO factors that hamper the marketing of mangoes**
- Perishability/spoilage ✓
- Low value in relation to high volume ✓
- Lack of control over production/diversity in production ✓
- Wide distribution of products/transport costs ✓
- Standardisation ✓
- Seasonal changes ✓
- Poor infrastructure/accidents/theft ✓
- Lack of capital ✓
- Competition ✓

(Any 2) (2)

2.4 **Description for fresh produce markets**
Fruits and vegetables are marketed in the larger centres/municipal markets ✓
by agents for commission ✓ (2)

2.5 **Marketing chain**

2.5.1 **Identification of**

(a) **The processing plant -** Abattoir/butchery ✓ (1)
(b) **Retailer -** Butchery ✓ (1)
(c) **Producer-** Farm ✓ (1)

2.5.2 **TWO ways to streamline and improve the agri-business chain**

- Improving infrastructure ✓
- Cooling/storage facilities ✓
- Improving communication ✓
- Use of the latest technology ✓
- Make use of internet/social platforms ✓
- Combining loads/partnerships ✓
- Process products near the farm ✓
- Increased governmental control over imports ✓ (Any 2) (2)

2.6 **Entrepreneurship**

- D ✓ (1)
- C ✓ (1)
- A ✓ (1)
- B ✓ (1)

2.7 **Business plan**

2.7.1 **ONE aspect that should be included in**

(a) **The title page**

- Name of the business/person ✓
- Logo ✓
- Address ✓
- Contact details of the business/person ✓ (Any 1) (1)

(b) **Human resource plan**

- Number and type of employees ✓
- Competencies and skills needed ✓
- Recruitment process/capacity building of staff ✓ (Any 1) (1)

2.7.2 **ONE item that should be included in a good business plan**

- Name of business/partners/partnership ✓
- Business strategy ✓
- Production/operational plan ✓
- Management plan/time management plan ✓
- Sales and marketing plan ✓
- Financial plan ✓
- Reasons for success of business ✓
- SWOT analysis ✓ (Any 1) (1)

2.8 **SWOT Analysis**

Indication of the component of SWOT analysis

A Threat ✓ (1)
B Weakness ✓ (1)
C Strength ✓ (1)
D Opportunity ✓ (1)
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QUESTION 3: PRODUCTION FACTORS

3.1 **The law of diminishing returns**

3.1.1 **Identification of the range where each of the following occurs:**

(a) **Diminishing returns -** B to C ✓ (1)
(b) **Negative returns -** C to D ✓ (1)
(c) **Increasing returns -** A to B ✓ (1)

3.1.2 **The letter representing a point of maximum production**

C ✓ (1)

3.1.3 **ONE method to improve land productivity**

- Improving soil health by adding fertiliser/adding organic matter ✓
- Optimizing water management ✓
- Selecting appropriate/improved cultivars/crops ✓
- Implementing efficient scientific farming practices/reduce tillage/crop rotation/intercropping ✓
- Use of improved technology/precision farming ✓
- Land use optimization/putting together uneconomic units ✓
- Infrastructure development ✓
- Research/extension/education ✓ (Any 1) (1)

3.2 **Economic characteristic of land**

3.2.1 Land is limited/scarcity of land/availability ✓ (1)

3.2.2
- Land appreciates in value ✓
- Land can be bought or sold ✓ (Any 1) (1)

3.3 **Labour problems**

3.3.1 **ONE cause that may result in the loss of farm labourers**

- Unfavourable working conditions/working hours ✓
- Lower wages/salaries ✓
- Poor living conditions ✓
- Lack of training ✓
- Better opportunities in the industries ✓ (Any 1) (1)

3.3.2 **Explanation of how ill-health threatens the stability of the labour force and production on the farm**
The ill-health of the labourers causes absenteeism/loss of skills and experience ✓ and subsequently drop in agricultural production/ income ✓ (2)

3.3.3 **TWO implications of the Labour Relations Act**
- Involvement in decision making ✓
- Right to join a union/strike ✓
- Economic development ✓
- Prevention of unfair labour practice ✓
- Provision of procedures for the resolution of labour disputes ✓
- Ensuring social justice and fair working conditions ✓ (Any 2) (2)

3.4 **Labour contract**

3.4.1 **Item in the contract serving as a proof of an agreement**
Signatures/signing/writing names ✓ (1)

3.4.2 **ONE other item to be included in a contract**
- Remuneration details/wages ✓
- Place of work ✓
- Job description ✓
- Termination of employment ✓
- Hours of work ✓
- Leave benefits ✓
- Period/duration of employment ✓
- Fringe benefits ✓
- Medical benefits ✓
- Mode of payment ✓
- Details of the employer and employee ✓ (Any 1) (1)

3.5 **Capital**

3.5.1 **Indication of the types of capital**
A - Production/floating/working capital ✓ (1)
B - Movable capital ✓ (1)

3.5.2 **Source of credit used to purchase fixed capital**
Land bank/Commercial banks ✓ (1)

3.5.3 **Deduction of the problem of movable capital**
- Risk factor ✓
- Depreciation ✓
- Expensive/mechanical/maintenance ✓ (Any 1) (1)

3.6 Budget

3.6.1 Name of the financial record
Whole farm budget/budget ✓ (1)

3.6.2 Identification of an example of
(a) **Fixed costs -** Insurance ✓ (1)
(b) Variable costs - Feeds/fuel/pesticides/electricity/seeds/wages ✓ (1)

3.6.3 Calculation of the profit/loss for the farming business
Profit/loss = Total income **–** Total expenditure ✓
= R280 000 **–** R133 400 ✓
= R146 600 ✓ (3)

3.7 Management

3.7.1 Type of risk encountered by the manager
Market/price/financial risk ✓ (1)

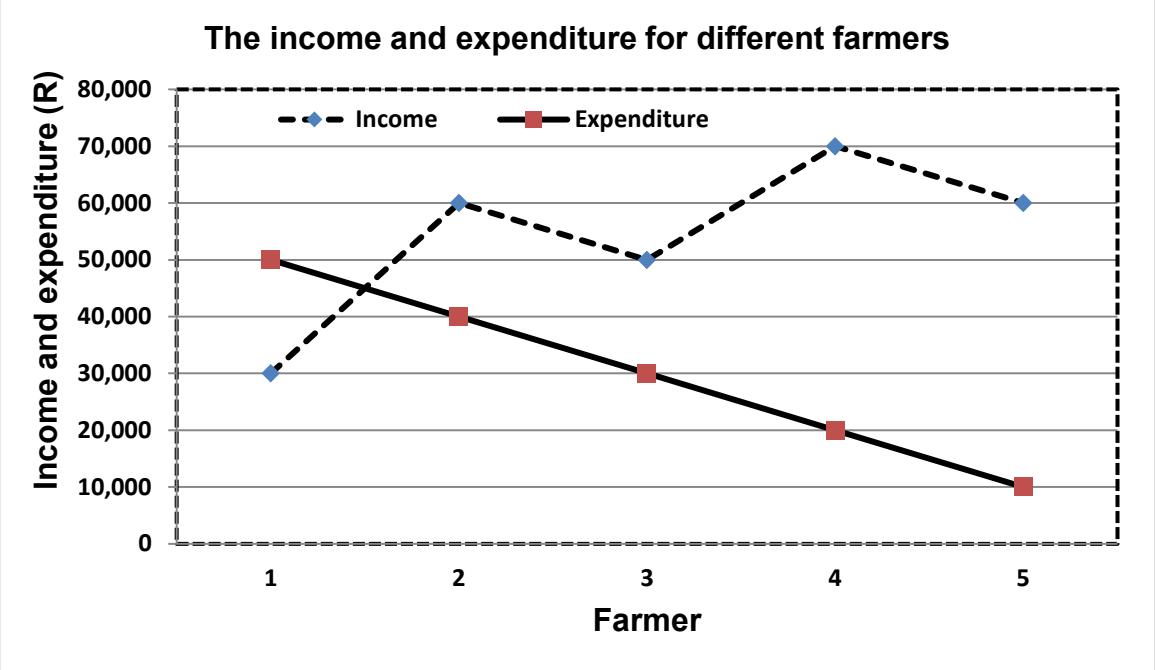
3.7.2 One risk management strategy
- Risk sharing ✓
- Diversification ✓ (Any 1) (1)

3.7.3 ONE principle of management
- Planning/setting goals ✓
- Implementation/coordinating ✓
- Control/monitoring ✓
- Decision making ✓
- Organisation ✓
- Communication/motivation/leading/directing ✓ (Any 1) (1)

3.7.4 Explanation of how competition affects farming business
With more competition in the market, more products will be produced ✓ resulting in better quality, a wider variety of products resulting in price fluctuation in the market ✓ (2)

3.8 Line graph

3.8.1 Line graph



CRITERIA/RUBRIC/MARKING GUIDELINES

- Correct heading (both variables included) ✓
- X-axis: Correctly calibrated with label (Farmer) ✓
- Y axis: Correctly calibrated with label (Income and expenditure) ✓
- Correct units (R) ✓
- Line graph ✓
- Accuracy (80%+ correctly plotted) ✓ (6)

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QUESTION 4: BASIC AGRICULTURAL GENETICS

4.1 Chromosomes

4.1.1 Identification of the examples

(a) Heterozygous alleles - Gg ✓ (1)

(b) Homozygous recessive alleles - rr/bb ✓ (1)

4.1.2 Naming the fixed position

Locus ✓ (1)

4.2 Patterns of inheritance

4.2.1 Identification of the patterns of inheritance

(a) **PICTURE A -** Incomplete dominance ✓ (1)
(b) **PICTURE B -** Co-dominance ✓ (1)

4.2.2 Justification for co-dominance

- Colour for both parents is represented in the offspring ✓
- Both red and white colours/roan are present in the offspring ✓
- The offspring has the phenotype of both parents ✓
- Both red and white are equally dominant ✓
- No intermediate or mixture of colour is formed ✓ (Any 1) (1)

4.3 Cross between a black bull and white cow

4.3.1 Identification of the type of crossing

Monohybrid crossing ✓ (1)

4.3.2 Punnett square

Gametes	B	B
b	Bb	Bb
b	Bb	Bb

Marking rubric

Correct gametes of male parent ✓
Correct gametes of female parent ✓
Correct genotype of the offspring ✓
Correct punnet square ✓ (4)

4.3.3 Calculation of the percentage black offspring in F_1 generation

$\frac{4}{4}$ x 100 ✓
= 100% ✓ (2)

4.4 Patterns of inheritance

4.4.1 Indication of the type of inheritance

Polygenic inheritance ✓ (1)

4.4.2 Calculation of the maximum milk yield for the dairy cow per day

- 40+(5x6) litres ✓
- 40+30 litres ✓
- = 70 litres ✓ (3)

4.4.3 **Genotype that can produce 60 litres of milk per day**

- PPQQrr ✓
- ppQQRR ✓
- PpQqRR ✓
- PPqqRR ✓
- PPQqRr ✓
- PpQQRr ✓ (Any 1) (1)

4.5 **Variation**

4.5.1 **The name of the phenomenon**
Variation ✓ (1)

4.5.2 **ONE genetic cause of the variation**

- Mutation ✓
- Meiosis/crossing over/recombination of genes ✓
- Random fertilisation ✓ (Any 1) (1)

4.5.3 **Explanation of the statement**

- Variation in traits within a population allows breeders to choose individuals ✓ that are more productive, disease-resistant, or have other desirable characteristics ✓
- Variation provides the raw material for breeders to identify and select individuals ✓ with desirable traits for improving crops and livestock ✓ (Any 1) (2)

4.6 **Breeding and selection**

4.6.1 **Indication of a breeding system**
Upgrading ✓ (1)

4.6.2 **The number of generations to develop a breed with 87% characteristics of a Hereford -** 3 (three) ✓ (1)

4.6.3 **Deduction of ONE disadvantages of upgrading**

- Improvement is slow ✓
- The offspring can never breed 100% pure ✓
- Expensive because bulls are renewed ✓
- Bull calves of the first few generations cannot be sold as breeding stock ✓ (Any 1) (1)

4.6.4 **ONE related breeding system**

- Inbreeding ✓
- Line breeding ✓ (Any 1) (1)

4.7 Heritability

4.7.1 Identification of a characteristic the farmer will mostly not consider
Fleece weight ✓ (1)

4.7.2 Explanation of the effectiveness
Meat tenderness has a heritability of 80% ✓ and therefore, there is a high possibility that the characteristic can be passed to the offspring for the improvement of the herd ✓ (2)

4.7.3 Type of selection
Artificial selection ✓ (1)

4.8 Plant improvement

4.8.1 Identification of process of plant improvement
Genetic modification (GM) /engineering ✓ (1)

4.8.2 Name of the technique used
Bacterial carriers/Use of *Agrobacterium tumefaciens* ✓ (1)

4.8.3 The purpose of using genetic modification
Used to develop insect resistant fruit/to increase insect resistance in plants ✓ (1)

4.8.4 ONE other use of genetic modification
- Improve disease/pest resistance □
- Improve herbicide tolerance □
- Improve resistance to harsh environmental conditions/salinity □
- Improve nutritional value of the crop □
- Improve yield □
- Longer shelf life □ (Any 1) (1)

4.8.5 ONE potential health risks of GMO
- It can lead to the development of food allergies ✓
- It may cause long term negative health effects ✓ (Any 1) (1)

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TOTAL SECTION B: 105
GRAND TOTAL: 150

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