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basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

AGRICULTURAL SCIENCES P2

NOVEMBER 2024

MARKING GUIDELINES

MARKS: 150

These marking guidelines consist of 11 pages.

SECTION A**QUESTION 1**

- 1.1
- | | | | |
|--------|------|----------|------|
| 1.1.1 | A ✓✓ | | |
| 1.1.2 | C ✓✓ | | |
| 1.1.3 | D ✓✓ | | |
| 1.1.4 | B ✓✓ | | |
| 1.1.5 | C ✓✓ | | |
| 1.1.6 | A ✓✓ | | |
| 1.1.7 | B ✓✓ | | |
| 1.1.8 | D ✓✓ | | |
| 1.1.9 | B ✓✓ | | |
| 1.1.10 | C ✓✓ | (10 x 2) | (20) |
- 1.2
- | | | | |
|-------|------|---------|------|
| 1.2.1 | J ✓✓ | | |
| 1.2.2 | A ✓✓ | | |
| 1.2.3 | C ✓✓ | | |
| 1.2.4 | G ✓✓ | | |
| 1.2.5 | B ✓✓ | (5 x 2) | (10) |
- 1.3
- | | | | |
|-------|------------------------------|---------|------|
| 1.3.1 | Strategic risk management ✓✓ | | |
| 1.3.2 | Productivity ✓✓ | | |
| 1.3.3 | Prepotency ✓✓ | | |
| 1.3.4 | Biometrics ✓✓ | | |
| 1.3.5 | Super weeds ✓✓ | (5 x 2) | (10) |
- 1.4
- | | | | |
|-------|--|---------|-----|
| 1.4.1 | Price determination ✓ | | |
| 1.4.2 | Interest ✓ | | |
| 1.4.3 | Recessive ✓ | | |
| 1.4.4 | Upgrading ✓ | | |
| 1.4.5 | Genetic modification/GM/engineering/manipulation ✓ | (5 x 1) | (5) |

TOTAL SECTION A: 45

SECTION B**QUESTION 2: AGRICULTURAL MANAGEMENT AND MARKETING****2.1 Supply and demand****2.1.1 Identification of**

- (a) Illustration B ✓ (1)
 (b) Illustration A ✓ (1)

2.1.2 Explanation of the law of demand

- The higher the price the lower the demand of products ✓✓
- The lower the price the higher the demand of products ✓✓
- The price is inversely proportional to the demand of products ✓✓
 (Any 1) (2)

2.1.3 TWO factors influencing the supply except for price

- Production/labour/input costs ✓
- Technology ✓
- Subsidies/taxation ✓
- Possibilities of increasing the supply of products ✓
- Demand for the product ✓
- Environmental conditions/nature
- Availability of the product ✓
- Competitive products ✓
- Profit margin of the product ✓
- Stability of the product ✓
- Knowledge of the product/research ✓
- Political instability ✓
- Number of suppliers ✓
- Legislation ✓
- Seasonality of the product ✓
 (Any 2) (2)

2.2 Price elasticity and inelasticity**2.2.1 The type of elasticity**

- (a) Graph A - Price elastic ✓ (1)
 (b) Graph B - Price inelastic ✓ (1)

2.2.2 Reason

The change in price results in a huge change in quantity demanded ✓ (1)

2.2.3 TWO factors that led to elasticity

- Nature of the product ✓
- Availability of substitute product ✓
- Consumer's budget/income ✓
- Time period ✓
 (Any 2) (2)

2.3 Marketing system**2.3.1 Identification of the marketing system**

Free marketing ✓

(1)

2.3.2 TWO advantages of free marketing system to the buyer

- Buyers get good quality products ✓
- Elimination of agents leads to lower prices ✓
- Buyers can bargain ✓
- Buyers buy where they want ✓
- Convenient to buyers ✓

(Any 2)

(2)

2.3.3 ONE economic term referring to the phenomenon

Price fixing ✓

(1)

2.3.4 TWO principles of agricultural co-operative

- Voluntary and open membership ✓
- Democratic member control ✓
- Equal economic participation by members ✓
- Autonomy and independence ✓
- Provision of education, training and information to members ✓
- Cooperation among cooperatives ✓
- Concern for community ✓
- Marketing is based on a pool system ✓
- Members have a single vote ✓
- Members are paid dividends/limited amount of their share capital ✓
- Only members may deliver products ✓

(Any 2)

(2)

2.4 Entrepreneurship**2.4.1 Justification**

The farmer saw an opportunity to start a business and took a risk ✓

(1)

2.4.2 TWO entrepreneurial success factors of the farmer

- Determination ✓
- Resilience ✓
- Passion ✓
- Opportunist ✓

(Any 2)

(2)

2.4.3 ONE example**(a) Strength of the enterprise**

- Good qualities of an entrepreneur ✓
- Owning one-hectare of land ✓

(Any 1)

(1)

(b) Threat to the enterprise

- Break-ins ✓
- Scarcity of water ✓

(Any 1)

(1)

2.5 Agricultural marketing chain**2.5.1 Types of an agricultural marketing chain****DIAGRAM A** - Demand chain ✓

(1)

DIAGRAM B - Supply chain ✓

(1)

2.5.2 The type of an agricultural marketing chain**(a)** DIAGRAM B ✓

(1)

(b) DIAGRAM A ✓

(1)

2.5.3 TWO ways used to streamline and improve the agri-business chain

- Use of cold storage and refrigerated transport ✓
- Grading and standardization of products ✓
- Marketing collectively by combining loads with other farmers ✓
- Processing of products closer to the farm ✓
- Improving road infrastructure to facilitate marketing ✓
- Improving access to market information ✓
- Availability of storage facilities ✓
- Providing access to finance ✓
- Improving cell phone and internet connectivity ✓

(Any 2)

(2)

2.6 TWO roles of legislation in the effective marketing of agricultural products

- Promoting efficient marketing of agricultural products ✓
- Optimizing efficient marketing of agricultural products ✓
- Assists in making sure that there are minimum marketing interventions ✓
- Increasing market access to all participants ✓
- Enhancing the viability of the agricultural sector ✓
- Regulate/quality control on import/export products ✓
- Prevent unfair marketing practices/consumer exploitation ✓
- Ensures that product information is given in a simple language ✓
- Ensure that products comply with set standards/ensure product safety ✓
- Set and maintain national standards at processing sites ✓
- Regulate market agents and improve their functioning ✓
- Authorising the establishment and regulations for marketing ✓

(Any 2)

(2)

2.7 Business plan**2.7.1 Name of the document**

Business plan

(1)

2.7.2 TWO reasons for developing a business plan

- Test the feasibility and economic viability of the business idea ✓
- Determine the financial needs ✓
- Repositioning the business to deal with changes in the market ✓
- Gain knowledge about marketing opportunities and competitors ✓
- Foresee problems which reduces risk ✓
- Guide daily operations/roles and responsibilities ✓
- Secure funding ✓
- Ensure effective business management ✓
- Mapping out objectives and goals ✓
- Provide guidelines for decision making ✓
- Provide timeframes for completion of projects ✓
- Provide information about the business ✓

(Any 2) (2)

2.7.3 TWO problems when drawing up a business plan

- Insufficient technical details ✓
- Unrealistic assumptions and projections/overambitious ✓
- Leaving gaps/being vague/errors/not authentic/too generic/provision of too much unnecessary information ✓
- Hiding weaknesses and risks ✓
- Incomplete financials/forgetting to include the cash flow ✓
- Insufficient research ✓
- Using incorrect format ✓
- Not including information about suppliers of the business ✓
- Not highlighting potential competition ✓

(Any 2) (2)
[35]**QUESTION 3: PRODUCTION FACTORS****3.1 Land****3.1.1 Name of the production factor that appreciates the value Land ✓**

(1)

3.1.2 TWO economic functions of land

- Provides food ✓
- Provides space ✓
- Provides raw materials ✓
- Provides minerals ✓
- Serves as a collateral ✓

(Any 2) (2)

3.2 The law of diminishing returns**3.2.1 Deduction of the economic characteristic of land The law of diminishing returns ✓**

(1)

3.2.2 Comparison of maize production in response to increased fertiliser application

- (a) With increase in fertilizer application from 1 – 10kg maize production increases at an increasing rate ✓ (1)
- (b) With increase in fertilizer application from 15 – 20kg maize production increases at a decreasing rate ✓ (1)

3.3 Duties performed by farm workers**3.3.1 Identification of the example of labour**

- (a) **WORKER 1** - Casual worker ✓ (1)
- (b) **WORKER 2** - Seasonal worker ✓ (1)

3.3.2 Reason

Worker 2 performs repetitive tasks/work ✓ (1)

3.3.3 TWO ways to increase labour productivity

- Improve economic conditions of workers ✓
 - Improve educational conditions/training ✓
 - Improve working conditions ✓
 - Improve living conditions ✓
 - Addressing HIV/Aids ✓
 - Managing labour/supervision ✓
 - Efficient mechanisation ✓
 - Proper planning ✓
 - Involvement of workers in decision making ✓
 - Motivation ✓
- (Any 2) (2)

3.4 Contract of employment**3.4.1 Labour legislation****(a) Basic Conditions of Employment Act (Act 75 of 1997)**

- Duration of contract: 01 February 2021 - retirement ✓
 - Remuneration/Amount ✓
 - Terms of employment/leave/working hours ✓
 - Mode of payment ✓
- (Any 1) (1)

(b) Occupational, Health and Safety Act (Act 85 of 1993)

Protective clothing ✓ (1)

3.4.2 TWO ways in which migration of labour will decrease production

- It leads to labour shortages ✓
 - It leads to a shortage in skills/expertise/experience ✓
- (Any 2) (2)

3.5 Capital**3.5.1 Identification of the types of capital**

- A** - Fixed ✓ (1)
- B** - Movable ✓ (1)

3.5.2 Example of production capital/C

Seeds/fuel/feeds/wages/fertilizer/chemicals/transport costs ✓ (1)

3.5.3 Types of credit

- (a) A - Long-term credit ✓ (1)
 (b) C - Short-term credit ✓ (1)

3.5.4 ONE method of creating capital

- Production ✓
- Savings ✓
- Credit/loans ✓
- Grants/sponsors/donations ✓
- Inheritance/trust funds ✓
- Partnerships ✓ (Any 1) (1)

3.6 Income and expenses**3.6.1 Identification of the enterprise**

- (a) Highest income - B ✓ (1)
 (b) Lowest expenses - C ✓ (1)

3.6.2 The financial record

Income statement ✓ (1)

3.6.3 Calculation of the profit or loss of enterprise A

Profit/loss = Total income – Total expenses ✓
 = R30 000 – R50 000 ✓
 = – R20 000/loss of R20 000 ✓ (3)

3.7 Problems associated with capital as a production factor.

- 3.7.1 Scarcity/shortage/expensive/costly ✓ (1)
 3.7.2 Overcapitalisation ✓ (1)

3.8 Risk**3.8.1 TWO sources of risks**

- Production risk ✓
- Technical risk ✓
- Financial/market and price risk ✓ (Any 2) (2)

3.8.2 Reason

- **Production risk** - Machinery breakdown/
environment poses a risk to production ✓
- **Technical risk** - Machinery breakdown ✓
- **Financial/market and price risk** - Loss of sales ✓ (Any 2) (2)

3.8.3 Identification of a risk management strategy

Diversification ✓ (1)

3.8.4 ONE management principle

- Planning ✓
- Organisation/coordination ✓
- Decision making ✓
- Implementation ✓
- Control ✓

(Any 1)

(1)

[35]**QUESTION 4: BASIC AGRICULTURAL GENETICS****4.1 Monohybrid crossing****4.1.1 The fraction of the dented offspring**

1/4 ✓

(1)

4.1.2 Calculation of the percentage of heterozygous spherical seeds

- = $2/4 \times 100$ ✓
- = 50% ✓

(2)

4.1.3 Phenotypic ratio of the F₁ generation

3 spherical : 1 dented ✓

(1)

4.1.4 The number of offspring looking similar to the parents

- Phenotypically - 3 ✓
- Genotypically - 2 ✓

(Any 1)

(1)

4.2 Patterns of inheritance**4.2.1 Identification of the patterns of inheritance****(a) B** - Co-dominance ✓

(1)

(b) A - Incomplete dominance ✓

(1)

4.2.2 Justification of incomplete dominance

The offspring has an intermediate characteristic ✓

(1)

4.2.3 The genotype of the offspring in illustration B

RW ✓

(1)

4.3 Qualitative and quantitative characteristics**4.3.1 Height** - Quantitative characteristics ✓

(1)

4.3.2 Horn conformation - Qualitative characteristics ✓

(1)

4.3.3 Milk Production - Quantitative characteristics ✓

(1)

4.4 Variation**4.4.1 Indication of the phenomenon**

Variation ✓

(1)

4.4.2 The cause of variation

Genetic ✓

(1)

4.4.3 ONE cause of variation

- Meiosis/crossing over/random arrangement of chromosomes ✓
- Random fertilization ✓
- Mutation ✓

(Any 1) (1)

4.4.4 ONE importance of variation in breeding

- It forms the foundation of selection and breeding ✓
- To improve animal breeds/plant cultivars over time ✓
- To increase biodiversity ✓

(Any 1) (1)

4.5 Dihybrid crossing**4.5.1 ONE characteristic to be improved**

- Leaf length ✓
- Seed colour ✓

(Any 1) (1)

4.5.2 Punnet square

Gametes	PL	PL
pl	PpLl	PpLl
pl	PpLl	PpLl

Marking rubric

- Correct gametes of male parent ✓
- Correct gametes of female parent ✓
- Correct genotype of the offspring ✓
- Completed punnet square and populated ✓

(4)

4.5.3 Indication of the law

- The law of independent assortment ✓

(Any 1) (1)

4.6 Breeding system**4.6.1 Identification of the breeding system**

- (a) Cross breeding ✓
- (b) Outcrossing ✓

(1)

(1)

4.6.2 ONE advantage of the crossbreds

- Crossbreds exhibit heterosis/hybrid vigour ✓
- Crossbreds are more resistant to diseases ✓
- Crossbreds have more vitality/fertility ✓
- Crossbreds perform better than their parents ✓
- More economic production/mass gain in relation to food intake is higher ✓
- Better adaptability to environmental conditions ✓

(Any 1) (1)

4.6.3 ONE selection method

- Mass selection ✓
- Family selection ✓
- Pedigree selection ✓
- Progeny selection ✓

(Any 1) (1)

4.7 Technique used in plant breeding**4.7.1 The plant breeding technique**

The use of bacterial carriers/Agrobacterium tumefaciens ✓

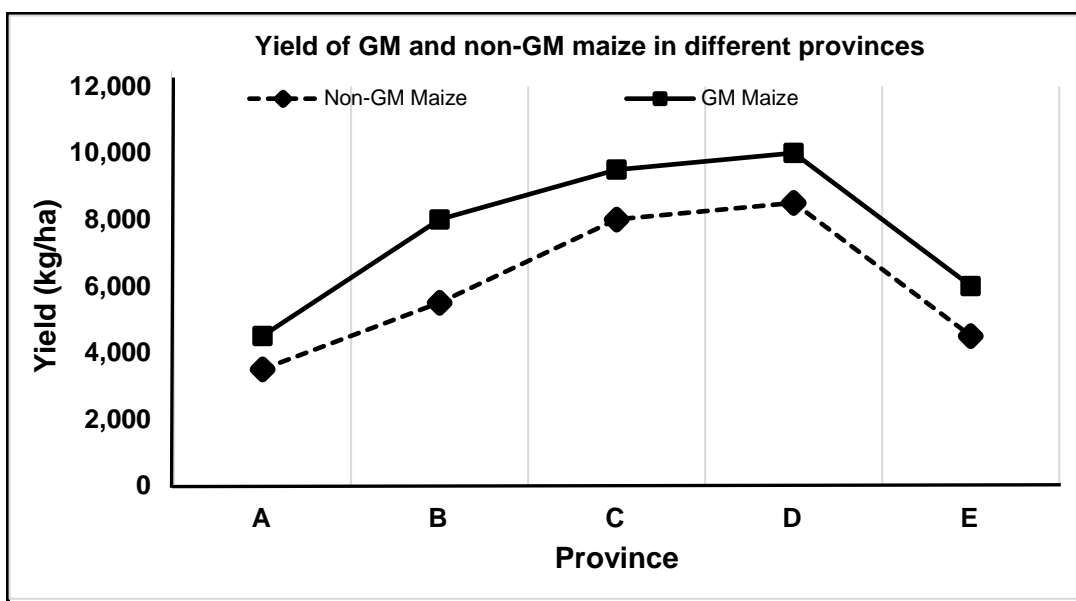
(1)

4.7.2 TWO potential environmental benefits of GM crops

- Reduce the need for chemical spraying/herbicides/pollution ✓
- Tolerant to extreme conditions (cold/drought/salinity) ✓
- Beneficial insects are not harmed ✓
- Allows for no tillage farming ✓

(Any 2)

(2)

4.8 Line graph showing the yields of the GM maize and non-GM maize in the different provinces**CRITERIA/RUBRIC/MARKING GUIDELINES**

- Correct heading with both variables ✓
- X-axis: Correctly calibrated and labelled (Province) ✓
- Y-axis: Correctly calibrated and labelled (Yield) ✓
- Correct units (kg/ha) ✓
- Combined line graph ✓
- Accuracy (80% + correctly plotted) ✓

(1)

(1)

(1)

(1)

(1)

(1)

[35]

TOTAL SECTION B: 105
GRAND TOTAL: 150