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basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

AGRICULTURAL SCIENCES P2

NOVEMBER 2022

MARKING GUIDELINES

MARKS: 150

These marking guidelines consist of 11 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	A ✓✓		
	1.1.5	B ✓✓		
	1.1.6	D ✓✓		
	1.1.7	C ✓✓		
	1.1.8	A ✓✓		
	1.1.9	D ✓✓		
	1.1.10	C ✓✓		
1.2	1.2.1	H ✓✓	(5 x 2)	(10)
	1.2.2	F ✓✓		
	1.2.3	I ✓✓		
	1.2.4	B ✓✓		
	1.2.5	D ✓✓		
1.3	1.3.1	Controlled marketing ✓✓	(5 x 2)	(10)
	1.3.2	Consolidation ✓✓		
	1.3.3	Incomplete dominance ✓✓		
	1.3.4	Electroporation ✓✓		
	1.3.5	Polyploidy ✓✓		
1.4	1.4.1	Fixing ✓	(5 x 1)	(5)
	1.4.2	Interest ✓		
	1.4.3	Biometrics ✓		
	1.4.4	Atavism/throwback ✓		
	1.4.5	Gene ✓		

TOTAL SECTION A: 45

SECTION B**QUESTION 2: AGRICULTURAL MANAGEMENT AND MARKETING****2.1 Availability of agricultural products over a period of six months**

2.1.1 **Indication of the quantities of product 1**
30 tons ✓ (1)

2.1.2 **Identification of the product**
Product 2 ✓ (1)

2.1.3 **Stating of the problem**

- There will be a surplus/spoilage/storage costs ✓
- The price of the product will be less ✓ (Any 1) (1)

2.1.4 **Factor hampering marketing of product 1**

- Seasonal fluctuation ✓
- Perishability ✓
- Accidents/theft ✓
- Lack of infrastructure ✓
- Lack of capital ✓
- Lack of market information ✓
- Long distances to markets ✓ (Any 1) (1)

2.1.5 **TWO factors influencing the demand**

- Price ✓
- Change in consumer income/buying power ✓
- Number of consumers ✓
- Tastes and preferences of consumers ✓
- Price of competing/complementing/substitute products ✓
- Range of products available ✓
- Usefulness of the product ✓
- The quality of the product ✓
- Festive season/fashion ✓
- Research ✓
- Socio-economic factors ✓
- Legislation ✓
- Advertising ✓
- Price expectations ✓ (Any 2) (2)

2.2 Marketing system

2.2.1 **Identification of the marketing system**
Free marketing ✓ (1)

2.2.2 Identification of the channels**A** - Farm gate marketing ✓ (1)**B** - Fresh produce marketing ✓ (1)**2.2.3 ONE advantage of CHANNEL A/farm gate**(a) **Farmer** - No market chain costs/no transportation costs/
no intermediaries/higher income/immediate payment ✓ (1)(b) **Consumer** - Products will be fresh/better quality/lower prices/
have bargaining power ✓ (1)**2.2.4 ONE disadvantage of CHANNEL C/stock sale to sellers**

- Prices may be lower than the market price ✓
- Seller may not get the expected price/less profit ✓
- Small-scale farmers may not have money to take animals to auction sale ✓ (Any 1) (1)

2.3 Entrepreneurship**2.3.1 Identification of THREE phases of entrepreneurship**

- Identifying the opportunity ✓
- Developing a business plan ✓
- Resource mobilization ✓
- Starting and managing the enterprise ✓ (Any 3) (3)

2.3.2 TWO other reasons for drafting a business plan

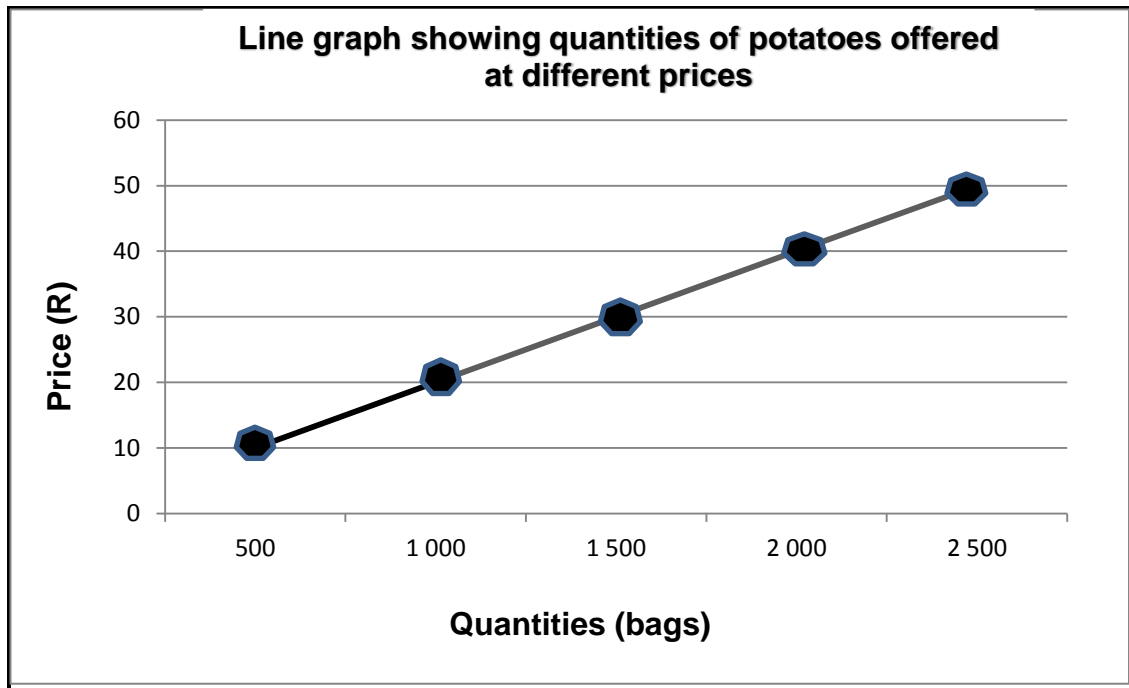
- To test the feasibility/economic viability of the business idea ✓
- Helps to define goals ✓
- Outlines the roles and responsibilities of individuals ✓
- Provides time frames for completion of activities ✓
- Provides guidelines for decision making/to compare progress ✓
- To guide daily operations ✓
- Helps manager to plan for capital requirements ✓
- Provides clear strategies/objectives to follow ✓
- To ensure effective business management ✓
- Allows to foresee problems which reduces risks ✓
- Repositioning the business to deal with changes in a market ✓
- To gain knowledge about marketing opportunities/competitors ✓
- Attract investors/partners ✓ (Any 2) (2)

2.3.3 Indication of success factors

- (a) Leadership/organization/management/interpersonal skills/
confidence ✓ (1)
- (b) Risk taking/confidence/positive thinking ✓ (1)

2.4 Supply

2.4.1 Line graph



CRITERIA/RUBRIC/MARKING GUIDELINE

- Correct heading ✓
- X-axis: Correctly calibrated and labelled (Quantities) ✓
- Y-axis: Correctly calibrated and labelled (Price) ✓
- Correct units (R and bag) ✓
- Line graph ✓
- Accuracy (80%+ correctly plotted) ✓

(6)

2.4.2 Law of supply

- The higher the price ✓ the higher the supply ✓
- The lower the price ✓ the lower the supply ✓

(Any 1)

(2)

2.4.3 TWO factors other than price that contributed to supply

- Environmental conditions/nature ✓
- Availability of technology ✓
- Knowledge on production ✓
- Production costs ✓
- Subsidies/taxation/legislation ✓
- Number of suppliers ✓
- Price expectation/profit margin of the product ✓
- Demand of the product ✓
- Seasonal production ✓
- Political instability ✓
- Possibility of increasing/decreasing the supply of goods ✓
- Stability of the product ✓

(Any 2)

(2)

2.5 Marketing chain**2.5.1 TWO costs increasing the price of a product**

- Production costs ✓
- Packaging costs ✓
- Processing costs
- Storage costs ✓
- Transportation/distribution costs ✓
- Grading costs ✓

(Any 2) (2)

2.5.2 Stage at which the agribusiness chain can be improved

- (a) Storage ✓
- (b) Farm ✓

(1)

(1)

2.5.3 TWO ways of making the product known to the consumer

- Advertising/radio/television/billboards/newspapers/internet/brochures/posters/flyers ✓
- In-store promotion ✓
- Exhibitions/trade fares ✓
- Sponsorship ✓
- Direct mailing ✓
- Marketing agent ✓
- Personal selling ✓

(Any 2) (2)

[35]**QUESTION 3: PRODUCTION FACTORS****3.1 Land****3.1.1 TWO other economic characteristics of land**

- Is required for production ✓
- Land is fixed/found in a specific environment ✓
- Indestructible ✓
- Land appreciates ✓
- Durability ✓
- Varies in production potential ✓
- Restrictedness ✓
- Passive factor for production/primary production factor ✓
- Source of wealth/can be bought/sold/used as a collateral ✓
- Subjected to the law of diminishing returns ✓

(Any 2) (2)

3.1.2 TWO ways in which the productivity of land can be improved

- Improving water management/supply ✓
- Restore land potential/responsible use of pesticides ✓
- Farm land more efficiently/consolidate uneconomic units ✓
- Crop rotation/intercropping/rotational grazing ✓
- Research ✓
- Use of scientific methods/technology/improve soil fertility/precision farming ✓

(Any 2) (2)

3.1.3 TWO functions associated with land as a production factor

- Asset (used as collateral in obtaining loans) ✓
- Provides space for agricultural activities ✓
- Provides food/feeding for humans/animals ✓
- Source of raw materials ✓
- Source of minerals ✓

(Any 2) (2)

3.2 Labour productivity**3.2.1 Identification of the production factor**

Labour ✓

(1)

3.2.2 Deduction of the relationship

An increase in the number of workers ✓ resulted to the increase in output ✓

(2)

3.2.3 TWO labour problems

- Poor labour management/supervision/late arrival/theft ✓
- Scarcity of labour/lower wages ✓
- Lack of training/skills ✓
- HIV/AIDS/other diseases/absenteeism ✓
- Competition from industries ✓
- Socio-economic problems ✓
- Labour unrest ✓

(Any 2) (2)

3.2.4 TWO ways to improve the economic conditions of farm workers

- Paying higher wages ✓
- Providing incentives for workers ✓
- Paying bonuses ✓
- Providing medical insurance/pension ✓
- Supplying them with farm products at reduced prices ✓
- Entering into partnership deal with workers ✓
- Provide education and training to workers ✓

(Any 2) (2)

3.3 Indication of labour legislations

3.3.1 Basic Conditions of Employment Act/BCEA (Act 75 of 1997) ✓

(1)

3.3.2 Skills Development Act/SDA (Act 97 of 1998) ✓

(1)

3.3.3 Occupational Health and Safety Act/OHSA (Act 85 of 1993) ✓

(1)

3.4 Assets and liabilities

3.4.1 Identification of

(a) An asset

- Value of the farm ✓
- Value of vehicles ✓
- Cash ✓
- Value of buildings ✓

(Any 1) (1)

(b) A liability

- Tractor loan ✓
- Bank overdraft ✓
- Mortgage loan ✓

(Any 1) (1)

3.4.2 Calculation of the net worth of the farm

Net worth = Assets – Liabilities ✓

$$= (R650\,000 + R50\,000 + R275\,000 + R3\,500\,000) - \\ (R365\,000 + R150\,000 + R4\,200\,000)$$

$$= R4\,475\,000 \checkmark - R4\,715\,000 \checkmark$$

$$= -R240\,000 \checkmark$$

(4)

3.4.3 Indication of the viability of a farming business

Not viable ✓

(1)

3.4.4 Reason

Net worth is negative/–R240 000/no profit/loss/value of assets is less than the value of the liabilities ✓

(1)

3.5 Capital items

3.5.1 Identification of the type of capital

(a) C - Movable capital ✓

(1)

(b) B - Fixed capital ✓

(1)

3.5.2 Indication of the problem of capital in F (tractor)

Depreciation/loses value/high fuel costs ✓

(1)

3.5.3 Types of credit

(a) D - Short-term credit ✓

(1)

(b) E - Long-term credit ✓

(1)

3.6 Management

3.6.1 Definition of management

Effective combination and coordination of human, physical and financial resources ✓ to achieve a specific goal, usually maximising profits ✓

(2)

3.6.2 TWO management principles

- Planning/setting goals ✓
- Implementation
- Leading/directing ✓
- Organization/coordination ✓
- Decision making ✓
- Communication ✓
- Motivation ✓
- Monitoring ✓
- Control ✓

(Any 2) (2)

3.6.3 TWO risk management techniques

- Diversification ✓
- Risk sharing ✓

(2)
[35]**QUESTION 4: BASIC AGRICULTURAL GENETICS****4.1 Breeding systems****4.1.1 (a) Crossing 1 - Cross breeding ✓**

(1)

(b) Crossing 3 - Inbreeding ✓

(1)

4.1.2 Definition of inbreeding

The breeding of closely related animals ✓

(1)

4.1.3 ONE disadvantage of inbreeding

- Leads to inbreeding depression ✓
- Loss of genetic variation ✓
- Increase the expression of lethal genes ✓
- Undesired genes are made more homozygous ✓
- Undesirable characteristic/deformities can be bred into the progeny ✓
- Leads to reduced vitality ✓
- Less resistance to diseases ✓
- An expensive system ✓

(Any 1) (1)

4.1.4 TWO advantages of cross breeding

- Produce hybrid vigour/heterosis ✓
- Development of new breeds ✓
- Increased adaptability ✓
- Increases genetic variation ✓
- More resistant to pests/diseases ✓
- Improves performance of animals ✓

(Any 2) (2)

4.2 Variation**4.2.1 TWO internal causes of variation**

- Mutation ✓
 - Meiosis/crossing-over/recombination of genes ✓
 - Random fertilisation ✓
- (Any 2) (2)

4.2.2 TWO importance of variation

- Forms the basis of selection ✓
 - Improves existing breeds/cultivars ✓
 - Development of new breeds/plant cultivars ✓
- (Any 2) (2)

4.3 Selection

- 4.3.1 Pedigree selection ✓ (1)
- 4.3.2 Family selection ✓ (1)
- 4.3.3 Mass selection ✓ (1)
- 4.3.4 Progeny selection ✓ (1)

4.4 Punnett square**4.4.1 The genotype**

- (a) Female parent - HhWW ✓ (1)
- (b) Number 17 - hR ✓ (1)

4.4.2 Determination of the phenotype

- (a) Number 9 - Polled and roan ✓ (1)
- (b) Number 16 - Horned and white ✓ (1)

4.4.3 Number of horned roan cattle

2 ✓ (1)

4.4.4 Number of polled red cattle

0 ✓ (1)

4.5 Sex chromosomes and determination**4.5.1 Sex chromosomes**

- (a) Number of sex chromosomes in goats - 2 ✓ (1)
- (b) Pairs of autosomes in horses - 31 ✓ (1)

4.5.2 Sex determination

- (a) Indication of the percentage chance - 50% ✓ (1)
- (b) Determination of the ratio - 1:1 ✓ (1)

4.6 Heritability**4.6.1 Definition of heritability**

The degree to which a characteristic ✓ is determined by genetic factors ✓ (2)

4.6.2 Identification of characteristics

(a) **Qualitative** - Eye colour ✓ (1)

(b) **Quantitative** - Milk production/fleece weight ✓ (1)

4.6.3 Indication of the percentage of the environmental effect

60% ✓ (1)

4.6.4 Explanation of the relationship

- The higher the heritability of the trait ✓ the higher the estimated breeding value ✓
- The lower the heritability of a trait ✓ the lower the estimated breeding value ✓ (Any 1) (2)

4.7 Genetic modification**4.7.1 TWO advantages of genetic modification over traditional breeding methods**

- It is precise ✓
- It is faster ✓
- Not limited to organisms of the same species ✓ (Any 2) (2)

4.7.2 TWO negative effects of GM crops on the environment

- Leads to development of super weeds ✓
 - Beneficial insects can be killed ✓
 - Leads to the excessive use of herbicides/pollution ✓
 - Reduces biodiversity ✓ (Any 2) (2)
- [35]**

TOTAL SECTION B: 105

GRAND TOTAL: 150