basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

SENIOR CERTIFICATE EXAMINATIONS

AGRICULTURAL SCIENCES P2

2018

MARKING GUIDELINES

MARKS: 150

These marking guidelines consist of 10 pages.

SECTION A

QUESTION 1:

1.1	1.1.1	C ✓✓		
	1.1.2	A ✓✓		
	1.1.3	B ✓✓		
	1.1.4	D ✓✓		
	1.1.5	C ✓✓		
	1.1.6	D ✓✓		
	1.1.7	B ✓✓		
	1.1.8	B ✓✓		
	1.1.9	A ✓✓		
	1.1.10	C ✓✓	(10 x 2)	(20)
1.2	1.2.1	C ✓✓		
	1.2.2	H ✓✓		
	1.2.3	F ✓✓		
	1.2.4	B ✓✓		
	1.2.5	A ✓✓	(5 x 2)	(10)
1.3	1.3.1	Promotion ✓✓		
	1.3.2	Assets ✓✓		
	1.3.3	Artificial selection ✓✓		
	1.3.4	Biometrics ✓✓		
	1.3.5	Epistasis ✓✓	(5 x 2)	(10)
1.4	1.4.1	Cost ✓		
	1.4.2	Hedging ✓		
	1.4.3	Phenotype ✓		
	1.4.4	Gene ✓		
	1.4.5	Atavism/throw-back ✓	(5 x 1)	(5)
			TOTAL SECTION A:	**45**

SECTION B

QUESTION 2: AGRICULTURAL MANAGEMENT AND MARKETING

2.1 Marketing channel used by farmers in a free marketing system

2.1.1 Identification of the marketing channel
Fresh produce marketing channel ✓ (1)

2.1.2 TWO advantages of a fresh produce marketing channel
- Able to sell large quantities of farm produce/attracts more buyers ✓
- Producers can use an agent to market their produce ✓
- Producers take advantage of the higher prices in times of short supply ✓
- Cash on the spot/no delay in payment ✓ (Any 2) (2)

2.1.3 TWO disadvantages of a free marketing system for a producer
- Prices fluctuate ✓
- High market costs ✓
- Time-consuming/ producer responsible to market own products ✓
- Limited bargaining power ✓
- Great risk as production decisions may lead to financial losses/surplus production can lead to a price drop ✓
- Price fixing/competition ✓
- Producers can monopolize ✓
- Attracting consumers may not be so easy ✓ (Any 2) (2)

2.2 Cooperative marketing

2.2.1 Marketing system preferred for the producers
Cooperative marketing ✓ (1)

2.2.2 Term describing the system where produce is brought together
Pool system ✓ (1)

2.2.3 THREE benefits of the system
- More bargaining power ✓
- Lower marketing costs ✓
- Easy access to funding/support ✓
- Cheaper services ✓
- Higher average price/dividends ✓
- Risk sharing ✓
- Producers can secure larger contracts ✓
- Time saving/time for farming activities ✓ (Any 3) (3)

2.3 **Products and their quantities demanded at different prices**

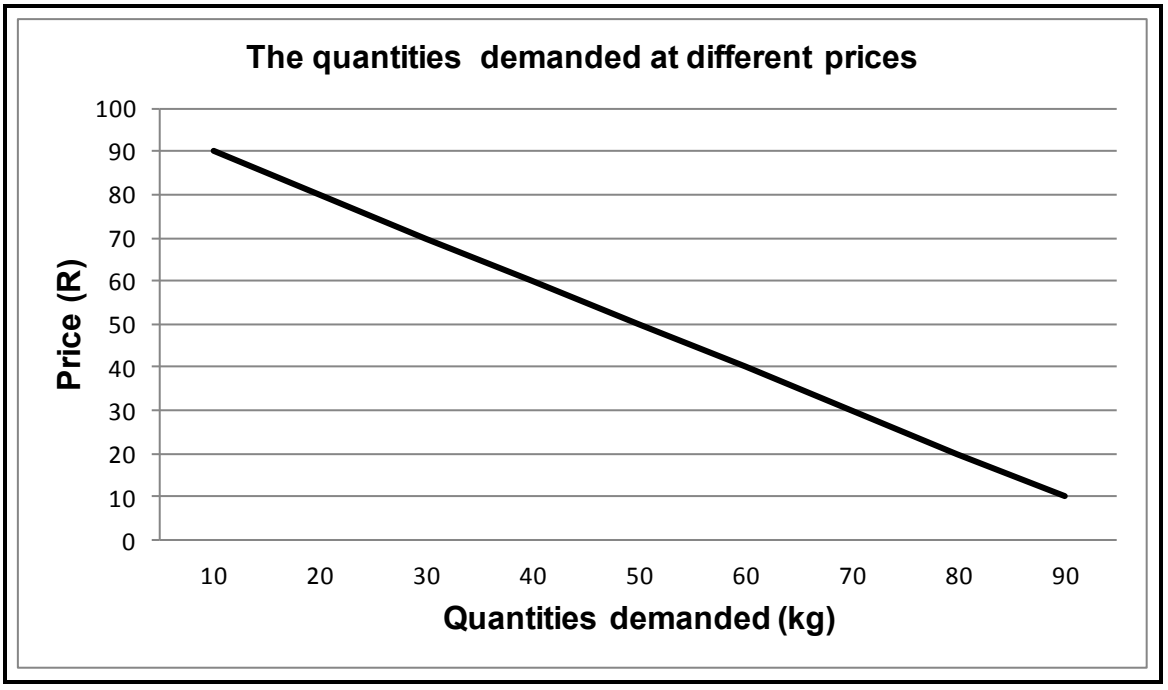
2.3.1 **TWO factors influencing the demand of PRODUCT 2**

- Preference/taste of the consumer ✓
- Usefulness of the product ✓
- Income of consumers ✓
- Number of consumers ✓
- Price of competitive products ✓
- Season of the year/seasonal fluctuation ✓
- Consumer lifestyle ✓
- Advertising/promotion ✓
- Research/healthy tendencies/legislation ✓
- Substitute products ✓
- Quality of the product ✓ (Any 2) (2)

2.3.2 **Trend of quantities demanded for PRODUCT 2**

- Even when the price was going up ✓ the consumers continued to buy the product ✓
- No huge difference in quantities demanded ✓ even when there was an increase in price ✓
- Slight drop in quantities demanded ✓ even when there was an increase in price ✓ (Any 1) (2)

2.3.3 **Line graph of the quantities demanded for PRODUCT 1**



CRITERIA/RUBRIC/MARKING GUIDELINES

- Correct heading ✓
- X axis: Correctly calibrated with label (Quantities demanded) ✓
- Y axis: Correctly calibrated with label (Price) ✓
- Correct units (R and kg) ✓
- Line graph ✓
- Accuracy ✓ (6)

2.3.4 **The relationship between price and quantity demanded**
- When the price is high ✓ the quantity demanded is low ✓
- When the price is low ✓ the quantity demanded is high ✓(Any 1) (2)

2.4 **Business chain**

2.4.1 Wholesaler ✓ (1)

2.4.2 Yoghurt plant ✓ (1)

2.4.3 Chain store ✓ (1)

2.4.4 Milk producer ✓ (1)

2.4.5 Warehouse ✓ (1)

2.5 **The price trend of two agricultural products over a period of six months**

2.5.1 **The product mostly responsive to seasonal fluctuation**
Product 2 ✓ (1)

2.5.2 **The effect of seasonal production on the price of product 2**
- When the product is out of season ✓ the price is high ✓
- When the product is in season ✓ the price is low ✓ (Any 1) (2)

2.5.3 **ONE reason related to production that lead to a constant price of product 1**
Production occurs throughout the year/consistent production/ available throughout the year/products not seasonal/storage ✓ (1)

2.6 **FOUR phases of the entrepreneurial process**
- Identification of the opportunity ✓
- Evaluate the opportunity ✓
- Determining resources required ✓
- Developing the business plan ✓
- Starting and managing the enterprise ✓
- Growing the business ✓ (Any 4) (4)

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QUESTION 3: PRODUCTION FACTORS

3.1 **Economic characteristics of land**

3.1.1 **TWO economic characteristics of land**
- Production potential varies ✓
- Land is fixed/found in a specific environment/restrictedness ✓
- Land is subject to the law of diminishing return ✓
- Land is indestructible ✓
- Land is durable ✓
- Land is a passive factor ✓
- Land can be bought or sold ✓
- Value appreciates over time ✓
- Land is limited ✓
- Land is a primary production factor ✓ (Any 2) (2)

3.1.2 **TWO measure to improve productivity of land**

- Use of technology/precision farming ✓
- Adapt to scientific methods/practices ✓
- Improve water management/provision ✓
- Changing cropping practices ✓
- Consolidating uneconomical units/farming more efficiently ✓
- Restore land potential/application of indigenous knowledge ✓

(Any 2) (2)

3.1.3 **TWO functions of land as a production factor**

- For production/provision/supply of food ✓
- It provides physical space ✓
- It is a source of minerals ✓
- It is a source of raw materials ✓
- Can be used as collateral ✓ (Any 2) (2)

3.2 **Activities on the farm regulated by legislation**

3.2.1 **Indication of the labour legislation**

(a) Occupational Health and Safety Act (85 of 1993) ✓ (1)
(b) Labour Relations Act (66 of 1995) ✓ (1)
(c) Compensation for Occupational Injuries and Diseases Act (130 of 1993) ✓ (1)
(d) Basic Conditions of Employment Act (75 of 1997) ✓ (1)

3.2.2 **Classification of the farm worker**

Permanent/fulltime farm worker ✓ (1)

3.2.3 **TWO labour issues that might have led to the protest action**

- Poor working conditions ✓
- Failure to adhere to legislation ✓
- Farm evictions ✓
- Poor living conditions ✓
- Poor wages/salaries ✓
- Lack of training/education ✓
- Poor labour management ✓ (Any 2) (2)

3.2.4 **TWO measures by the farmer to address the labour issues**

- Better working conditions ✓
- Better wages/bonuses/incentives ✓
- Better living conditions/housing ✓
- Improved relations/communications/recognition for work well done ✓
- Provision of training/education ✓
- Better labour management ✓
- Refrain from evictions ✓
- Adherence to legislation ✓ (Any 2) (2)

3.3 **Capital for running an enterprise**

3.3.1 **Examples of capital items**

(a) Tractor ✓ (1)
(b) Pesticides/fertilizers/seeds ✓ (1)
(c) Land/borehole ✓ (1)

3.3.2 **TWO sources of capital for the family farming enterprise**

- Loan ✓
- Pension package pay-out ✓ (2)

3.3.3 **The total value of the assets**

R1 189 000 ┐
+ R 280 000 ┘ ✓
R1 469 000 ✓ (2)

3.3.4 **Deduction of two problems from the scenario**

- Insufficient capital/scarcity/undercapitalisation ✓
- Credit that will attract interest/high interest rates ✓
- Capital is subject to high risk ✓
- Capital depreciates ✓ (Any 2) (2)

3.4 **The steps that forms part of the decision-making process**

3.4.1 **The correct sequence of steps**

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

3.4.2 **TWO factors influencing effective decision making**

- Speed with which decisions are taken/timing of the decisions ✓
- The degree of accuracy with which decisions are taken ✓
- The acceptability of the decisions ✓
- Business sense ✓
- Social views/ethics ✓
- Economics ✓
- Profitability ✓
- Environmental sustainability ✓
- Politics ✓
- Outcome of the SWOT analysis ✓
- Past experience/available information/research ✓ (Any 2) (2)

3.5 **Farm with different operations that are managed with success**

3.5.1 **Identification of the risk management strategy**

Diversification ✓ (1)

3.5.2 **Justification**

It is a means of managing risk/risk is spread amongst many farming enterprises/a means of spreading farm investment over several enterprises ✓ (1)

3.5.3 **The management skill to decide in advance on a strategy**
Planning ✓ (1)

3.5.4 **TWO examples of production risks**
- Unpredictable weather and climatic conditions ✓
- Drought and flooding ✓
- Disease outbreak in crops and live stock ✓
- Insect infestation ✓
- Theft/predation ✓ (Any 2) (2)

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QUESTION 4: BASIC AGRICULTURAL GENETICS

4.1 Animal breeding pairs

4.1.1 **The percentage of red offspring**
PAIR 1: ¾ x 100 ✓ = 75% ✓ (2)

4.1.2 **Punnet square of the genotype of the offspring in PAIR 2**

✓	**D**	**d** ✓
D	DD	Dd ✓
d	Dd	dd

Marking guidelines/criteria
- Correct gametes ✓
- Correct offspring ✓
- Punnet square (with gametes and offspring) ✓ (3)

4.1.3 **Phenotype ratio of the offspring**
- 1 white:3 red ✓
  OR
- 3 red:1 white ✓
  OR
- white:red = 1:3/red:white = 3:1 ✓ (Any 1) (1)

4.1.4 **Breeding pair with dominant alleles**
Pair 2 ✓ (1)

4.1.5 **Reason**
D represents dominant alleles for red pigs/both parents are red ✓ (1)

4.2 Selection

4.2.1 **Genetic term responsible for improved yield**
Hybrid vigour/heterosis ✓ (1)

4.2.2 **Reason for using cultivars in a breeding programme**
Superior parents with the required characteristics ✓ can produce the offspring needed/with the required characteristics ✓ (2)

4.2.3 **TWO factors influencing variation**
- Genes/internal ✓
- Environment/external ✓ (2)

4.2.4 **TWO importance of variation**
- Helps to improve plant cultivars ✓
- Leads to development of new cultivars/cultivars become more evolved and cope with changing environment ✓
- Biodiversity ✓ (Any 2) (2)

4.3 **Dwarf-sized piglets**

4.3.1 **Identification of the breeding system**
Upgrading ✓ (1)

4.3.2 **ONE disadvantage of the breeding system**
- Male animals/boars of the first few generations cannot be sold as breeding stock ✓
- Improvement is relatively slow ✓
- Offspring cannot be bred 100% pure ✓
- Male animals/boars must always be bought ✓ (Any 1) (1)

4.3.3 **The factor determining the success of the selection process**
The selection of superior males/boars/AA ✓ (1)

4.3.4 **Explanation for selecting boars**
Boars have superior genetic characteristics ✓and sows have inferior genetic characteristics ✓ (2)

4.3.5 **Term for an animal responsible for a recessive gene**
Carrier ✓ (1)

4.3.6 **Genotype of a dwarf piglet**
aa ✓ (1)

4.4 **Breeding systems**

4.4. **Linking the breeding systems**
1 (a) Outcrossing ✓ (1)
(b) Species crossing ✓ (1)
(c) Cross breeding ✓ (1)
(d) Inbreeding ✓ (1)

4.4.2 **TWO types of mutagenic agents**
- Physical ✓
- Chemical ✓
- Biological ✓ (Any 2) (2)

4.5 Genetic modification versus conventional hybrids

4.5.1 Two techniques used to develop genetically modified plants

- Electroporation ✓
- Micro- injection ✓
- Bacterial carriers ✓
- Viral carriers ✓
- Biolistic/gene gun ✓
- Calcium phosphate precipitation ✓
- Gene splicing ✓
- Gene silencing ✓
- Lipofection ✓ (Any 2) (2)

4.5.2 Differentiation between

Conventional hybrid seed

- Produced through normal breeding practices ✓ (1)

Genetic modified seed

- Produced by intentionally inserting desired genes ✓ (1)

4.5.3 THREE advantages of genetic engineering

- Process is fast ✓
- More precise ✓
- Not limited to the crossing of species that are related ✓ (3)

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TOTAL SECTION B: 105
GRAND TOTAL: 150