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basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

SENIOR CERTIFICATE EXAMINATIONS/
NATIONAL SENIOR CERTIFICATE EXAMINATIONS

AGRICULTURAL SCIENCES P2

2021

MARKING GUIDELINES

MARKS: 150

These marking guidelines consist of 10 pages.

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SECTION A

QUESTION 1

1.1	1.1.1	D ✓✓		
	1.1.2	B ✓✓		
	1.1.3	C ✓✓		
	1.1.4	C ✓✓		
	1.1.5	D ✓✓		
	1.1.6	C ✓✓		
	1.1.7	A ✓✓		
	1.1.8	B ✓✓		
	1.1.9	D ✓✓		
	1.1.10	B ✓✓	(10 x 2)	(20)
1.2	1.2.1	D ✓✓		
	1.2.2	F ✓✓		
	1.2.3	H ✓✓		
	1.2.4	C ✓✓		
	1.2.5	B ✓✓	(5 x 2)	(10)
1.3	1.3.1	Shortage ✓✓		
	1.3.2	Contract ✓✓		
	1.3.3	Dominant ✓✓		
	1.3.4	Epistasis ✓✓		
	1.3.5	Heredity ✓✓	(5 x 2)	(10)
1.4	1.4.1	Green marketing/eco-labelling ✓		
	1.4.2	Motivation ✓		
	1.4.3	Pedigree ✓		
	1.4.4	Haemophilia ✓		
	1.4.5	Polygenic inheritance ✓	(5 x 1)	(5)

TOTAL SECTION A: 45

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SECTION B

QUESTION 2: AGRICULTURAL MANAGEMENT AND MARKETING

2.1 **Marketing**

2.1.1 **Definition of the concept marketing**
The process of planning and executing the conception, pricing, promotion ✓ and distribution of ideas, goods and services to consumers ✓ (2)

2.1.2 **The differences between marketing and selling**
(a) Marketing ✓ (1)
(b) Selling ✓ (1)
(c) Selling ✓ (1)

2.2 **Inelasticity of demand**

2.2.1 **Deduction of the marketing concept**
Price inelasticity of demand ✓ (1)

2.2.2 **A reason for the answer**
The demand changed slightly despite the huge change in price ✓ (1)

2.2.3 **Explanation of the reason why consumers responded in this way**
Maize meal is a necessity/staple food ✓ people will therefore buy maize meal even with a price increase ✓ (2)

2.2.4 **Identification of the factor leading to the differences in the number bags demanded**
Price ✓ (1)

2.3 **Cooperative marketing of avocadoes**

2.3.1 **Identification of the agricultural marketing system**
Cooperative marketing ✓ (1)

2.3.2 **Indication of the role of agricultural marketing system**
Production/selling/marketing ✓ (1)

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2.3.3 **TWO benefits for the marketing system to farmers**

- Lower marketing costs/cost distribution ✓
- Requirements/services are supplied cheaper/bulk purchasing ✓
- More bargaining power ✓
- Access to funding/credit to producers ✓
- Higher prices are obtained ✓
- Elimination of the intermediaries ✓
- Potential for growth ✓
- Access to better infrastructure ✓
- Branding ✓
- Risk sharing ✓
- Farmer spend more time on producing than on marketing ✓
- Access to professional expertise ✓ (Any 2) (2)

2.3.4 **TWO factors that may hamper the marketing of avocadoes**

- Perishability/spoilage ✓
- Seasonal fluctuations in production ✓
- Lack of capital ✓
- Poor infrastructure ✓
- Wide distribution of production areas ✓
- Ineffective control over production ✓
- Risk/theft/accidents ✓
- Standardization ✓
- Large volume in relation to value/bulkiness ✓ (Any 2) (2)

2.4 **Marketing function**

2.4.1 **Identification of the marketing function**

Packaging ✓ (1)

2.4.2 **THREE characteristics of the cardboard boxes which make them suitable**

- Clean/dry/undamaged/suitable for the product ✓
- No foreign tastes/odours ✓
- Free of visible signs of fungal growth ✓
- Strong/rigid/solid ✓
- Recyclable/biodegradable ✓
- Easy to handle ✓
- Identification ✓ (Any 3) (3)

2.4.3 **Reason for using cardboard boxes with holes**

Allow air flow/reduce spoilage/health reasons ✓ (Any 1) (1)

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2.5 **Drawing up a business plan**

2.5.1 **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 ✓ (Any 1) (1)

2.5.2 **Indication of an electronic resource**

Computer software programmes ✓ (1)

2.5.3 **TWO reasons for drawing up a business plan**

- To test the feasibility/economic viability of the business idea ✓
- To secure funding ✓
- To determine financial needs/budget ✓
- To guide daily operations/outlines roles and responsibilities ✓
- To allow the entrepreneur to foresee problems ✓
- To reposition/analyse the business ✓
- To gain knowledge about marketing opportunities and competitors ✓
- To ensure effective business management ✓
- Mapping out the objectives/goals of the enterprise ✓
- Provides information on the internal/external business environment ✓
- Provision of time frames ✓ (Any 2) (2)

2.5.4 **ONE problem encountered when drawing up a business plan**

- Incomplete/with gaps ✓
- Vague ✓
- Unrealistic assumptions/over ambitious ✓
- Hiding weaknesses and risks ✓
- Not taking the competition into account ✓
- Using the incorrect format ✓
- Insufficient research ✓
- Insufficient technical details ✓ (Any 1) (1)

2.6 **Entrepreneurship**

2.6.1 **Rearrangement of the phases of the entrepreneurial process**

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

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2.6.2 **TWO aspects of the SWOT analysis**

(a) **Internal -** Strength ✓ weaknesses ✓ (2)
(b) **External -** Opportunities ✓ threats ✓ (2)
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QUESTION 3: PRODUCTION FACTORS

3.1 **Land**

3.1.1 **The life of soil is unlimited if used correctly -** Durability ✓ (1)

3.1.2 **12% of the soil in South Africa can be cultivated -** Availability ✓ (1)

3.1.3 **Soil may be damaged but cannot be destroyed -** Indestructibility ✓ (1)

3.2 **TWO economic functions of land**

- Land provides space/area ✓
- Provides raw materials ✓
- Provides minerals ✓
- Food security ✓
- Serves as collateral/security ✓ (Any 2) (2)

3.3 **Labour**

3.3.1 **Labour legislation**
Basic Conditions of Employment Act (Act 75 of 1997)/BCEA ✓ (1)

3.3.2 **TWO problems experienced by farm workers**

- Long working hours ✓
- HIV/AIDS infections ✓ (2)

3.3.3 **TWO ways to address the impact of HIV/AIDS infections on farms**

- HIV/AIDS awareness campaigns/education/workshops ✓
- Provisions of condoms ✓
- Nutritional schemes ✓
- Provision of ARV's ✓
- Avoid multiple partners ✓
- Support groups ✓
- Treatment of STI's ✓ (Any 2) (2)

3.3.4 **TWO types of temporary farm workers**

- Casual worker ✓
- Seasonal worker ✓ (2)

3.4 **Income and expense record of a farm**

3.4.1 **Calculation of the profit or loss of the cattle enterprise**

- Profit/loss = total income – total expenditure ✓
- = R455 000 – R13 041 ✓
- Profit = R441 959 ✓ (3)

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3.4.2 **Comparing the profit of the tomato and maize enterprises**
- The profit of tomatoes is higher ✓ than that of maize ✓
- The profit of maize is lower ✓ than that of tomatoes ✓ (Any 1) (2)

3.4.3 **TWO overhead expense items**
- Fuel ✓
- Truck licence ✓ (2)

3.5 **Capital**

3.5.1 **Indication of the types of capital**
- Fixed ✓
- Movable ✓
- Floating/working/production ✓ (Any 2) (2)

3.5.2 **Total value of the assets**
R20 300 000 ✓ (1)

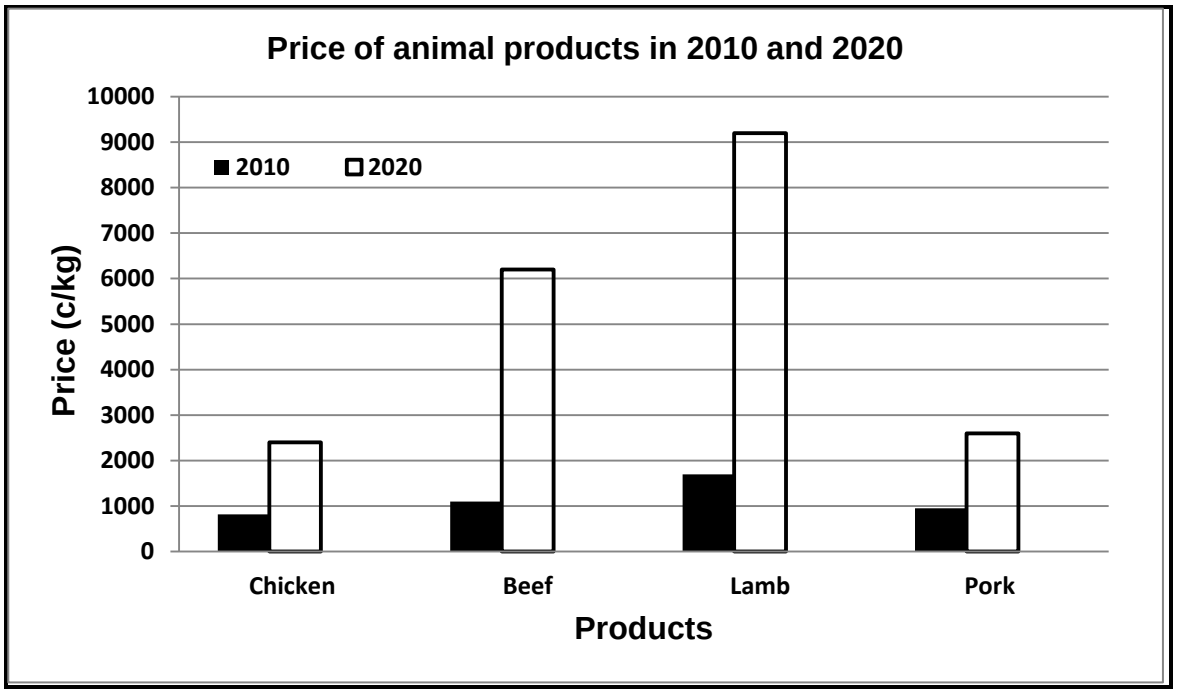
3.5.3 **Deduction of the type of credit obtained by the farmer**
Medium term credit ✓ (1)

3.5.4 **Justification of the answer**
It is used to purchase movable capital/truck ✓ (1)

3.5.5 **Capital item regarded as a liability**
Truck ✓ (1)

3.6 **Graph**

Bar graph showing the prices of animal products in 2010 and 2020



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CRITERIA/RUBRIC/MARKING GUIDELINES

- Correct heading ✓
- X-axis: Correctly calibrated with label (Products) ✓
- Y axis: Correctly calibrated with label (Price) ✓
- Correct units (c/kg) ✓
- Bar graph ✓
- Accuracy ✓ (6)

3.7 **Differentiation between the internal and external forces**

Internal forces - Those that have their origin on the farm and can be dealt with on the farm ✓ (1)

External forces - Those factors the farmer has no control over ✓ (1)

3.8 **Definition of risk sharing as a strategy of management**

The strategy in which the cost of consequences of a risk ✓ is distributed amongst several stakeholders ✓ (2)

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QUESTION 4: BASIC AGRICULTURAL GENETICS

4.1 **Variation**

4.1.1 **Identification of the number of cows with the highest milk yield**

6 ✓ (1)

4.1.2 **Identification of the factor leading to the differences in milk yield**

Feeding/Nutrition ✓ (1)

4.1.3 **Indication of the cause of the differences in milk production**

Environmental ✓ (1)

4.1.4 **TWO genetic causes of variation**

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

4.2 **Crossing of white rose with a red rose to produce pink flowers**

4.2.1 **Determination of the type of dominance**

Incomplete dominance ✓ (1)

4.2.2 **Punnett square determining the genotypes/phenotypes of the F_2**

Gametes	R	W
R	RR	RW
W	RW	WW

MARKING CRITERIA

- Correct gametes for parent 1 ✓
- Correct gametes for parent 2 ✓
- Correct offspring ✓
- Punnett square with gametes and offspring ✓ (4)

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4.2.3 **(a) Phenotypic ratio of the F_2 generation**
1 red **:** 2 pink **:** 1 white ✓ (1)

(b) Calculation of the pink offspring

- $\frac{2}{4}$ x 700 ✓
- = 350 ✓ (2)

(c) The percentage of red offspring - 25% ✓ (1)

4.3 **Breeding systems**

4.3.1 **Identification of the animal breeding system**
Cross breeding ✓ (1)

4.3.2 **Reason for the answer**
Two different breeds are crossed/Hereford and Nguni ✓ (1)

4.3.3 **TWO characteristics of the offspring that makes it better**
- Higher growth rate ✓
- More resistant to pests/parasites/diseases ✓ (2)

4.3.4 **TWO advantages of inbreeding**
- Uniform/homozygous offspring are produced ✓
- Farmer obtain pure-bred groups ✓
- Good characteristics from the ancestors are maintained ✓
- Bad recessive genes can be eliminated ✓
- Help with selection between family groups ✓
- Herd has greater prepotency ✓ (Any 2) (2)

4.4 **Pedigree**

4.4.1 **Determination of homozygous or heterozygous**
(a) 4 - Homozygous ✓ (1)
(b) 5 - Heterozygous ✓ (1)

4.4.2 **Reason for the answer**
The offspring has the recessive allele from the male parent/offspring 7 is homozygous recessive because it received one of its recessive allele from parent 5 ✓ (1)

4.4.3 **Indicate the genotype of individual:**
(a) 2 - Rr ✓ (1)
(b) 7 - rr ✓ (1)

4.5 **Mutations**

4.5.1 **Definition of mutation**
Is a sudden change ✓ in the genetic composition of an organism ✓ (2)

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

4.6 **Genetic modification technique in plants**

4.6.1 **Identification of the genetic modification technique**
Agrobacterium tumefaciens/bacterial carriers ✓ (1)

4.6.2 **Labelling structures**
A - Recombinant plasmid ✓ (1)
D - Transgenic plant/Genetically modified plant/GMO ✓ (1)

4.6.3 **Definition of genetically modified plant**
A plant whose DNA has been manipulated through technology ✓ to change its original DNA ✓ (2)

4.6.4 **ONE advantage of genetic modification**
- It is faster ✓
- More precise ✓
- Not limited to organisms of the same species ✓ (Any 1) (1)

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TOTAL SECTION B: 105
GRAND TOTAL: 150

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