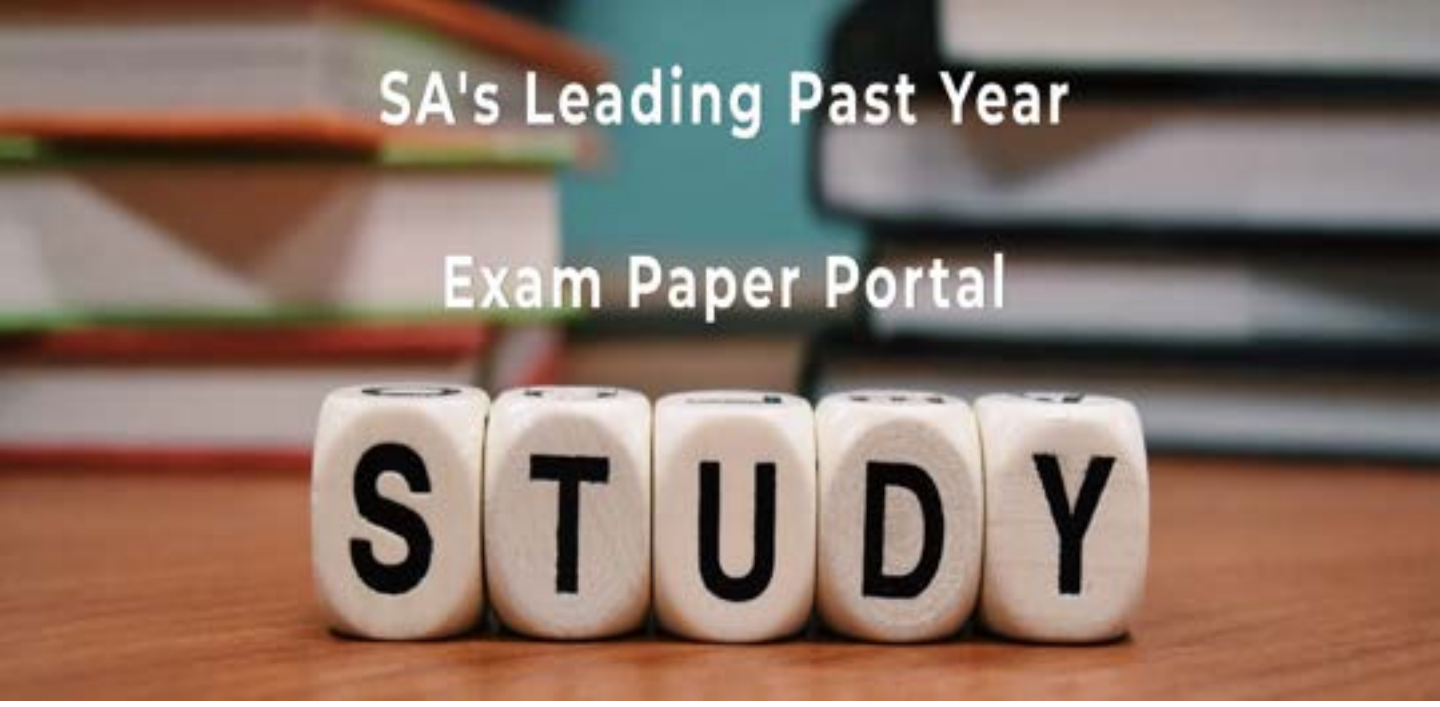

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GRADE 12

AGRICULTURAL SCIENCES P2

NOVEMBER 2018

MARKING GUIDELINES

MARKS: 150

These marking guidelines consist of 10 pages.

SECTION A

QUESTION 1

1.1	1.1.1	D ✓✓		
	1.1.2	B ✓✓		
	1.1.3	B ✓✓		
	1.1.4	A ✓✓		
	1.1.5	B ✓✓		
	1.1.6	D ✓✓		
	1.1.7	C ✓✓		
	1.1.8	C ✓✓		
	1.1.9	A ✓✓		
	1.1.10	A ✓✓	(10 x 2)	(20)
1.2	1.2.1	F ✓✓		
	1.2.2	H ✓✓		
	1.2.3	D ✓✓		
	1.2.4	E ✓✓		
	1.2.5	G ✓✓	(5 x 2)	(10)
1.3	1.3.1	Market segmentation ✓✓		
	1.3.2	Law of diminishing returns ✓✓		
	1.3.3	Dihybrid ✓✓		
	1.3.4	Mutation ✓✓		
	1.3.5	Gene ✓✓	(5 x 2)	(10)
1.4	1.4.1	Distribution ✓		
	1.4.2	Conceptual ✓		
	1.4.3	Heterozygous ✓		
	1.4.4	Heredity ✓		
	1.4.5	Atavism/throwback ✓	(5 x 1)	(5)

TOTAL SECTION A: 45

SECTION B

QUESTION 2: AGRICULTURAL MANAGEMENT AND MARKETING

2.1 Swot analysis

2.1.1 Identification of the day
Day 3 ✓ (1)

2.1.2 Relationship between price, supply and demand
- The higher the price ✓ the lower the demand ✓ and the higher the supply ✓
- The lower the price ✓ the higher the demand ✓ and the lower the supply ✓ (Any 1) (3)

2.1.3 Reason for lower demand in Day 5
The price for lemons was higher on day 5 and lower on day 1/ on day 5 the price was R30 and on day 1 it was R10 ✓ (1)

2.2 Product preparation

2.2.1 The function of marketing
Packaging ✓ (1)

2.2.2 TWO factors used in the grading of peaches
- Size/weight ✓
- Appearance/smoothness/bruising ✓
- Characteristics of the cultivar ✓
- Colour ✓
- Ripeness ✓ (Any 2) (2)

2.2.3 Factor hampering the marketing of peaches
Perishability/bruising/spoilage/volume/size ✓ (1)

2.2.4 THREE advantages of processing
- Available throughout the year ✓
- Prevent the spoilage/wastage/perishability ✓
- Can be transported to places where it is not produced ✓
- Storage period increases/longer shelf life ✓
- Improves the safety of products ✓
- More convenient/easier packaging/handling ✓
- Adds value/higher income/profit ✓
- Easier to transport than fresh products ✓
- Provides employment to many people ✓
- Assists to control over supply ✓ (Any 3) (3)

2.3 Free marketing

2.3.1 Free marketing channels
A Farm gate/direct marketing ✓ (1)
B Direct marketing/contract sales ✓ (1)
C Contract sales ✓ (1)

2.3.2 **Defining a free marketing system**

- Type of marketing where the producer sells ✓ to whoever/ wherever at any time/at any price ✓
- Type of marketing where a producer sells ✓ produce without restrictions/legislation ✓ (Any 1) (2)

2.3.3 **TWO advantages of contract sales for farmers**

- Bulk handling will reduce the cost of delivery ✓
- Marketing margin is reduced ✓
- Cutting out the intermediaries ✓
- Volume/sales guaranteed ✓
- Price is guaranteed ✓
- Reduces risk ✓ (Any 2) (2)

2.3.4 **Comparison of a cooperative marketing to free marketing with regard to price of produce**

- **Cooperative marketing -** Price is set/fixed/stable ✓ (1)
- **Free marketing -** Price fluctuates/unstable/changes/flexible ✓ (1)

2.4 **Entrepreneur**

2.4.1 **Identification of an entrepreneur**

Individual B ✓ (1)

2.4.2 **TWO personal characteristics of an entrepreneur**

- Confidence/courage ✓
- Risk taker ✓
- Innovative/creative ✓
- Self-motivated/drive ✓
- Hard working/energetic ✓
- Commitment ✓
- Foresight ✓ (Any 2) (2)

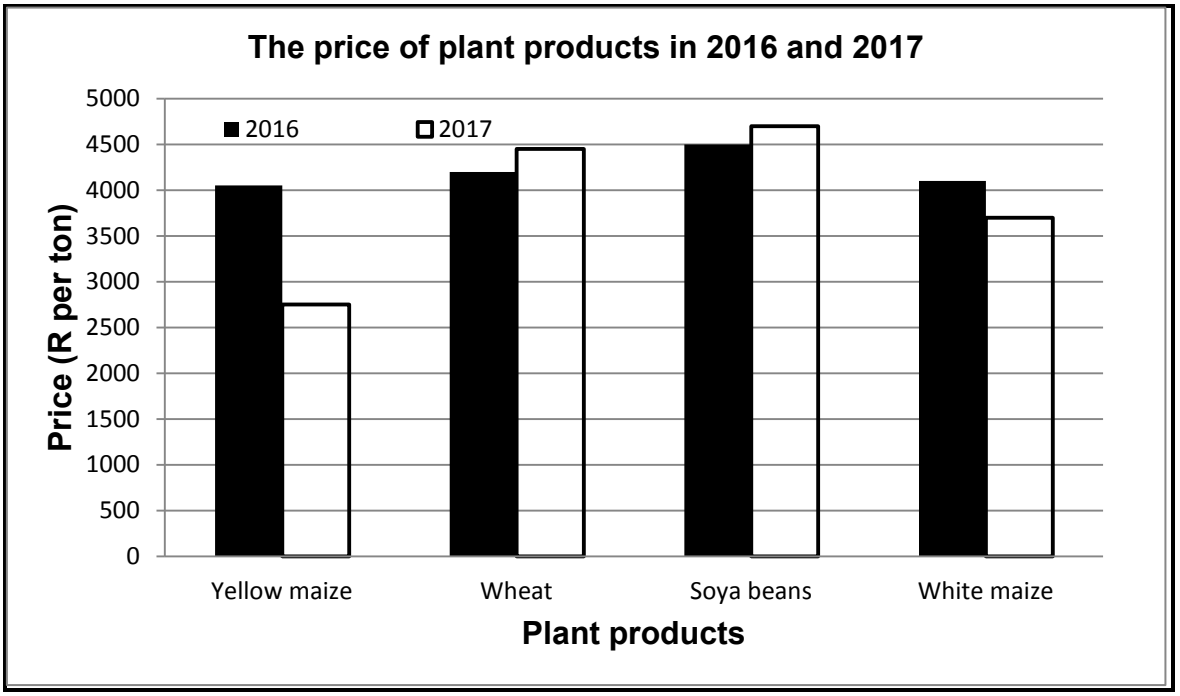
2.4.3 **Identification of the document from the scenario**

Business plan ✓ (1)

2.4.4 **TWO problems of drawing up a business plan**

- Leaving gaps/vague/too generic ✓
- Over ambitious/unrealistic assumptions ✓
- Hiding weaknesses and risk ✓
- Not highlighting competitors ✓
- Using incorrect format ✓
- Insufficient technical details ✓
- Incomplete financials/budget/cash flow errors ✓
- Insufficient research ✓ (Any 2) (2)

2.5 **Bar graph**



2.5.1 **CRITERIA/RUBRIC/MARKING GUIDELINES**

- Correct heading ✓
- X axis: Correctly calibrated with label (Plant products) ✓
- Y axis: Correctly calibrated with label (Price) ✓
- Correct units (R per ton) ✓
- Bar graph ✓
- Accuracy ✓ (6)

2.5.2 **Indication of the trend in maize and red meat price**
When the price of maize was decreasing from 2016 to 2017 ✓
the price of red meat was increasing ✓ (2)
[35]

QUESTION 3: PRODUCTION FACTORS

3.1 **Land as production factor**

3.1.1 **Economic function of land in**
Picture A: provision of food/raw materials ✓
Picture B: provision of physical space/area ✓ (2)

3.1.2 **Method to increase the production in PICTURE A**
The use of technology/scientific methods ✓ (1)

3.1.3 **Economic benefit of land to the farmer**
Serves as a collateral/security ✓ (1)

3.2 **Association of the statements to the economic characteristics of land**

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

3.2.2 Land is durable/indestructible/lifespan of land is unlimited ✓ (1)

3.2.3 Land appreciates in value ✓ (1)

3.3 **Labour as a production factor**

3.3.1 **Indication of the production factor**
Casual ✓ (1)

3.3.2 **TWO characteristics describing a permanent farm worker**
- Employed full-time ✓
- Enjoy benefits such as leave/housing/pension ✓
- Live with their families on the farm ✓
- Has a long term contract/conditions of employment ✓
- Allowed to have their own livestock on the farm ✓
- Profit sharing ✓ (Any 2) (2)

3.4 **Labour challenges**

3.4.1 **TWO challenges of labour affecting productivity**
- Abuse of alcohol ✓
- Longer working hours ✓
- Lower wages ✓
- Poor living/working conditions ✓
- Absenteeism ✓
- HIV and AIDS infections ✓
- Low levels of education/lack of training ✓ (Any 2) (2)

3.4.2 **TWO responsibilities by the farmer to address the challenges**
- **Abuse of alcohol -** Awareness programmes/recreation facilities ✓
- **Longer working hours -** Improved/better working hours ✓
- **Lower wages -** Improved wages/salaries ✓
- **Poor living/working conditions -** Improved working/living conditions ✓
- **Absenteeism -** Intervention/awareness programmes ✓
- **HIV and AIDS infections -** Improved health conditions/HIV/AIDS awareness campaigns ✓
- **Low levels of education/lack of training**
  Provision of education/training ✓ (Any 2) (2)

3.4.3 **TWO reasons for farm workers to be lost to other industries**
- Better wages in other sectors ✓
- Better working hours ✓
- Improved living conditions ✓
- Better health facilities ✓
- Better educational facilities ✓
- Recreational facilities ✓ (Any 2) (2)

3.5 **Capital**

3.5.1 **TWO sources of capital**
- Loan ✓
- Production/sales from eggs ✓ (2)

3.5.2 **TWO problems in regard to capital**
- High interest rate ✓
- Capital is scarce ✓ (Any 2) (2)

3.5.3 **TWO other problems of capital**
- Under capitalisation ✓
- Over capitalization ✓
- Depreciation ✓
- Risk ✓
- Capital is expensive ✓
- Law of diminishing returns ✓ (Any 2) (2)

3.5.4 **Calculation of profit with formula**
- Profit = Income – Expenditure ✓
- = R14,85 – R8,55 ✓
- Profit = R6,30 per dozen ✓ (3)

3.6 **Risk management**

3.6.1 **TWO risk management strategies**
- Diversification ✓
- Hedging/contract marketing ✓ (2)

3.6.2 **Justification of**
Diversification
The farmer has a number of different enterprises such as crops, livestock and fodder production in order to spread the risk ✓ (1)
Hedging/Contract marketing
The farmer made future contracts/agreement with supermarket ✓ (1)

3.7 **External and internal forces affecting the farming business**

3.7.1 **External forces affecting the farming business**
(a) Economical/political ✓ (1)
(b) Socio-cultural/health ✓ (1)
(c) Competitive ✓ (1)
(d) Socio-cultural/environmental ✓ (1)

3.7.2 **Sources of risk**
(a) Financial/market and price ✓ (1)
(b) Environmental ✓ (1)
[35]

QUESTION 4: BASIC AGRICULTURAL GENETICS

4.1 BREEDING PAIR 1 and BREEDING PAIR 2

4.1.1 Number of brown goats in the F_1 generation

0 ✓ (1)

4.1.2 The phenotypic ratio for the F_2 generation

24 white goats ✓**:** 8 brown goats ✓

OR

3 white goats ✓ **:** 1 brown goat ✓ (2)

4.1.3 Punnet square method to determine the genotypic ratio in the F_2-generation

	W	**w**
W	WW	Ww
w	Ww	ww

The ratio of the genotype = 1**:**2**:**1 (1 WW **:** 2 Ww **:** 1ww)

Marking guidelines/criteria

- Correct gametes ✓
- Correct offspring ✓
- Punnet square (with gametes and offspring) ✓
- Correct ratio ✓ (4)

4.2 Breeding systems

4.2.1 Deductions of the breeding systems

(a) Cross breeding ✓ (1)
(b) Inbreeding ✓ (1)
(c) Line breeding ✓ (1)

4.2.2 TWO characteristics of progeny E

- Grow faster ✓
- Better adaptability ✓
- Produce more than the parents ✓
- More resistant to diseases ✓
- Better feed conversion rate ✓ (Any 2) (2)

4.2.3 TWO disadvantages of inbreeding

- Decreased variation ✓
- Undesirable characteristics can be bred into the progeny ✓
- Produces deformities ✓
- Undesirable gene are rapidly made homogeneous ✓
- Degeneration may appear in the herd/ leads to inbreeding depression ✓
- Expensive system ✓
- Causes poor adaptability to an environment ✓
- Progeny are less resistant to diseases ✓
- Promote lethal genes ✓ (Any 2) (2)

4.3 Genetic modification

4.3.1 Identification of the techniques

(a) Electroporation ✓ (1)
(b) Micro- injection ✓ (1)
(c) Agrobacterium tumefaciens/bacterial/viral/biological carriers ✓ (1)

4.3.2 THREE potential benefits of GM crops

- Improved shelf life ✓
- Improved nutritional value/colour/flavour ✓
- Improved resistance to pests/diseases ✓
- Improved tolerance to harsh environmental/climatic conditions ✓
- Resistance to herbicides/pesticides ✓
- Grow fast ✓
- Improved production/yield ✓ (Any 3) (3)

4.3.3 TWO possible negative effects of GM crops on the environment

- Can produce super weeds ✓
- Insect resistant plants can kill beneficial insects ✓
- Farmers may use excessive amounts of herbicides that may damage the soil ✓
- Loss of biodiversity ✓
- Reduce the effectiveness of herbicides/pesticides ✓ (Any 2) (2)

4.4 Variation

4.4.1 Identification of the TWO types of variation

- Continuous ✓
- Discontinuous ✓ (2)

4.4.2 Differentiation between

Continuous
A complete range of characteristics from one extreme to the other/ Quantitative characteristics ✓ (1)

Discontinuous
A characteristic with a few clear cut forms/no intermediate forms/ Qualitative characteristics ✓ (1)

4.4.3 Indication of the characteristic of the chicken

(a) Head comb ✓
(b) Body size ✓ (2)

4.4.4 External factor that impacts on body size

- Nutrition/feeding/diet ✓
- Light intensity ✓
- Diseases ✓
- Population density ✓
- Temperature ✓ (Any 1) (1)

4.5 Patterns of inheritance

4.5.1 Linking of the statements

(a) Incomplete/partial dominance ✓ (1)
(b) Co-dominance ✓ (1)
(c) Complete dominance ✓ (1)

4.5.2 Indication of the genetic phenomenon of inheritance

Prepotency ✓ (1)

4.5.3 TWO other patterns of inheritance

- Polygenic ✓
- Multiple alleles ✓
- Atavism ✓
- Epistasis ✓ (Any 2) (2)

[35]

TOTAL SECTION B: 105

GRAND TOTAL: 150