



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

AGRICULTURAL SCIENCES P2

FEBRUARY/MARCH 2018

MARKING GUIDELINES

MARKS: 150

These marking guidelines consist of 10 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	D ✓✓		
	1.1.6	B ✓✓		
	1.1.7	A ✓✓		
	1.1.8	C ✓✓		
	1.1.9	D ✓✓		
	1.1.10	A ✓✓	(10 x 2)	(20)
1.2	1.2.1	G ✓✓		
	1.2.2	A ✓✓		
	1.2.3	C ✓✓		
	1.2.4	D ✓✓		
	1.2.5	H ✓✓	(5 x 2)	(10)
1.3	1.3.1	Innovation/creativity ✓✓		
	1.3.2	Budget ✓✓		
	1.3.3	Multiple alleles ✓✓		
	1.3.4	Family selection ✓✓		
	1.3.5	Genetic modification/engineering/manipulation ✓✓	(5 x 2)	(10)
1.4	1.4.1	Co-operative ✓		
	1.4.2	Occupational Health and Safety ✓		
	1.4.3	Species crossing ✓		
	1.4.4	Heterozygosity ✓		
	1.4.5	Gene ✓	(5 x 1)	(5)

TOTAL SECTION A: 45

SECTION B**QUESTION 2: AGRICULTURAL MANAGEMENT AND MARKETING****2.1 Table on marketing**

- 2.1.1 Marketing system used**
- Farmer A** - Free marketing ✓ (1)
- Farmer B** - Controlled marketing ✓ (1)
- 2.1.2 Reason for the system used by farmer B**
- Price is determined/controlled by the government ✓ (1)
- 2.1.3 Justification for mass marketing**
- Farmer B is reaching a wide range of consumers(larger markets) via the internet ✓ (1)
- 2.1.4 TWO ways to facilitate marketing in rural areas**
- Improve roads/infrastructure ✓
 - Improve market information through technology ✓
 - Transportation of produce in vehicles with cooling facilities. ✓
 - Cold storage depots ✓
 - Market collectively by combining loads ✓ (Any 2) (2)

- 2.2 TWO roles of legislation in ensuring effective marketing**
- Ensures increased market access to all participants ✓
 - Makes provision for quality control over imports and exports of products ✓ (2)

2.3 Component of a business plan

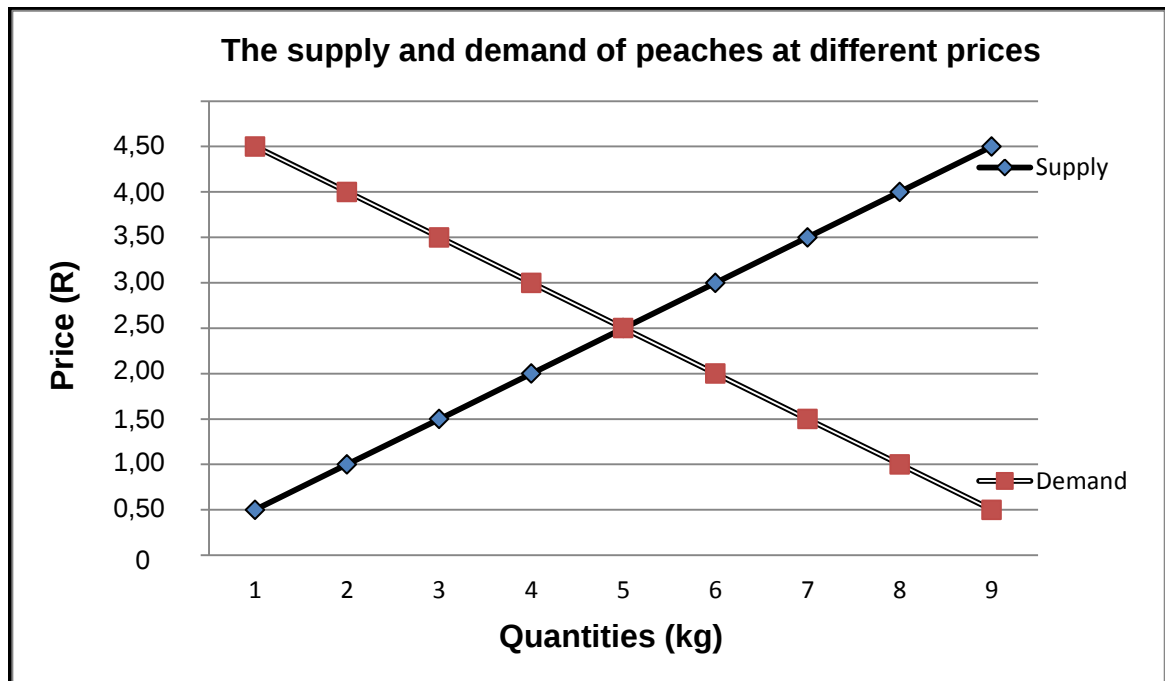
- 2.3.1** Title/cover page ✓ (1)
- 2.3.2** Human resource plan ✓ (1)
- 2.3.3** Financial plan ✓ (1)

2.4 THREE common mistakes when drawing a business plan

- Provision of unrealistic assumptions/over-ambitious ✓
- Not being able to identify the potential risks/hiding risks ✓
- Provision of too much unnecessary information/leaving gaps/being too vague ✓
- Committing budget and cash flow errors/incomplete financials ✓
- No information on competitors/not highlighting competition ✓
- Use of incorrect format/poor writing/incomplete plan ✓
- Inadequate/poor research ✓
- Insufficient technical details ✓ (Any 3) (3)

2.5 Supply and demand of peaches

2.5.1 Line graph showing the supply and demand of peaches



Criteria/rubric/marketing guidelines

- Correct heading ✓
- X axis - correctly calibrated and labelled (Quantities) ✓
- Y axis - correctly calibrated and labelled (Price) ✓
- Correct unit (R and kg) ✓
- Line graph ✓
- Accuracy ✓

(6)

2.5.2 Determination of the equilibrium price

R2,50 ✓

(1)

2.5.3 Situation when price is below the equilibrium price

- The quantity demanded is high ✓ and the quantity supplied is low ✓
- OR**
- Quantity supplied is low ✓ and quantity demanded is high ✓

(2)

2.6 Linking statements to factors hampering marketing of products

2.6.1 Perishability ✓

(1)

2.6.2 Political situation ✓

(1)

2.6.3 Lack of control over production ✓

(1)

2.6.4 Bulkiness ✓

(1)

- 2.7 **THREE requirements of a container for packaging**
- It must be clean/dry/undamaged ✓
 - Not import any foreign taste/odour to the product ✓
 - It must be free from signs of fungal growth ✓
 - It must be strong/rigid ✓
- (Any 3) (3)
- 2.8 **Type of consumers**
- 2.8.1 Retailers ✓ (1)
- 2.8.2 Food processing companies/factories ✓ (1)
- 2.8.3 Exporters ✓ (1)
- 2.9 **The law of demand**
- The higher the price ✓ the less the people/consumers will demand the product ✓
- OR**
- The lesser the price ✓ the more the people/consumers will buy the product ✓
- (2)
[35]

QUESTION 3 : PRODUCTION FACTORS

- 3.1 **Two groups of farmers**
- 3.1.1 **Factor of land addressed by the two scenarios**
Land availability/ area of production ✓ (1)
- 3.1.2 **TWO benefits of the practices by Group B contributing to higher production**
- Able to work on a large area faster ✓
 - Use of machinery is more effective ✓
 - More cost effective to produce ✓
 - Specialisation ✓
- (Any 2) (2)
- 3.1.3 **TWO techniques for Group A that can improve production**
- Use of scientific methods/technology ✓
 - Consolidation of small units ✓
- (2)
- 3.1.4 **Economic characteristic negatively affected by monoculture and continuous cultivation**
Production potential of the land ✓ (1)
- 3.1.5 **TWO functions of land as a production factor**
- Provides food ✓
 - Provides raw materials ✓
 - Provides space ✓
 - Source of raw minerals ✓
- (Any 2) (2)

3.2 Highly ethical and efficient work force

- 3.2.1 **The type of permanent labour who operates an advanced tractor**
Skilled labour ✓ (1)
- 3.2.2 **Indication of the expertise needed by the employee**
Technical/operational ✓ (1)
- 3.2.3 **Act of misconduct**
Sleeping on duty ✓ (1)
- 3.2.4 **Legislation that the employer would use to justify disciplinary steps**
Basic Conditions of Employment Act 75 of 1997 ✓ (1)
- 3.2.5 **TWO problems related to farm labour**
- Social/HIV and AIDS ✓
 - Scarcity ✓
 - Employers' concerns ✓
 - Competition from industries/economic migrants ✓
 - Lack of training/ education ✓
 - Poor labour management ✓
 - Safety ✓
 - Poor working conditions ✓ (Any 2) (2)
- 3.2.6 **TWO actions an employer should take**
- Provide incentives ✓
 - Rewards for good work ✓
 - Provide training/education ✓
 - Improve working conditions ✓
 - Improved living conditions ✓
 - Mechanisation ✓
 - Labour management ✓ (Any 2) (2)

3.3 Management

- 3.3.1 **Risk management strategy**
Diversification ✓ (1)
- 3.3.2 **Reason for the management strategy**
There are a number of enterprises in one farm/agri-tourism ✓ (1)
- 3.3.3 **TWO primary sources of risk in a farming business**
- Technical ✓
 - Market/price ✓
 - Financial ✓
 - Production ✓
 - Legal ✓
 - Human resources ✓ (Any 2) (2)

3.3.4 General business management skills applied by the manager

- (a) Co-ordination/organisational ✓ (1)
- (b) Analytic skills ✓ (1)
- (c) Interpersonal/communication ✓ (1)

3.3.5 Definition of strategic management

Management that allows the business to anticipate ✓ and adapt to changes in the future ✓

OR

The process of developing strategies that allow a business to achieve its vision, mission and objectives ✓ and adapt to changing conditions ✓ (2)

3.4 Capital**3.4.1 Fixed capital**

Land ✓ (1)

3.4.2 TWO sources of capital

- Grant ✓
- Loan ✓ (2)

3.4.3 Problem of capital

Scarcity ✓ (1)

3.4.4 Term of repayment

Medium term/5 years ✓ (1)

3.4.5 Calculation of the profit made by the community in 5 years

- Turnover: $R12\ 000\ 000 \times 5 = R60\ 000\ 000$ ✓
 - Expenses: $R4\ 000\ 000 \times 5 = R20\ 000\ 000$ ✓
 - Interest: $R2\ 000\ 000 \times 5\% = R100\ 000$ ✓
 - $R2\ 000\ 000 + R100\ 000 = R2\ 100\ 000$ ✓
 - Turnover – expenses:
 $R60\ 000\ 000 - R20\ 000\ 000 - R2\ 100\ 000 =$
 - Profit: $R37\ 900\ 000$ ✓ (5)
- [35]**

QUESTION 4: BASIC AGRICULTURAL GENETICS**4.1 Heterozygous pea plant (G) and a pure breed pea plant (g)****4.1.1 Genotype of each parent in the first crossing**

- Parent 1 - Gg ✓
- Parent 2 - gg ✓

(2)

4.1.2 Punnett square determining the possible genotype of the offspring in the first crossing

Gametes	G	g ✓
g	Gg	gg ✓
g	Gg	gg

Punnett square with gametes and offspring ✓

Marking Guideline

- Complete Punnett square with gametes and offspring ✓
- Correct gametes ✓
- Correct offspring ✓

(3)

4.1.3 Type of dominance in the cross

Complete dominance ✓

(1)

4.1.4 Reason for the type of dominance

50% of the seeds are yellow (G) ✓ and 50% of the seeds are green (g) ✓

OR

No intermediate/new colour ✓ as seeds resemble their parents ✓

(2)

4.1.5 Calculation of the percentage of heterozygous offspring

$$\frac{2}{4} \times 100 \checkmark$$

$$= 50\% \checkmark$$

(2)

4.2 Identification of the breeding system

4.2.1 B ✓

(1)

4.2.2 A ✓

(1)

4.2.3 D ✓

(1)

4.2.4 C ✓

(1)

4.2.5 A ✓

(1)

4.3 Variation**4.3.1 TWO genetic processes causing variation**

- Mutations ✓
- Meiosis/crossing over ✓
- Recombination of genes ✓
- Fertilisation ✓

(Any 2) (2)

4.3.2 TWO importance of variation

- Animals/plants with superior characteristics can be selected for breeding purposes ✓
- Helps to improve the progeny/offspring ✓
- Generate new varieties/ breeds/cultivars ✓
- Maintains biodiversity ✓

(Any 2) (2)

4.3.3 Distinction between Continuous variation

- Displays a complete range of quantitative characteristics ✓

(1)

Discontinuous variation

- Qualitative characteristics have a few clear cut/distinct forms/with no intermediate forms in between ✓

(1)

4.4 Selection**4.4.1 Group of cattle to be selected**

Group with a mass of 250 kg ✓

(1)

4.4.2 Reason

It has a higher average mass/average mass higher than the herd ✓

(1)

4.4.3 Identification of the type of selection method

Mass selection ✓

(1)

4.4.4 Explanation of this selection method

- Selection based on the individuals with superior characteristics ✓ within the group ✓

(2)

4.4.5 TWO other selection methods

- Family selection ✓
- Pedigree selection ✓
- Progeny selection ✓
- Breeding values/EBV/biometrics ✓

(Any 2) (2)

4.5 GM**4.5.1 Identification of the year**

2012/2013 ✓

(1)

4.5.2 Reason

An increase in yield/from 10,6 – 12t/ha ✓

(1)

- 4.5.3 **TWO advantages that Farmer B got from using GM maize**
- Yields increased ✓
 - Increase started from 2012 ✓
- (2)
- 4.5.4 **TWO important characteristics of GM maize crops**
- Resistant to herbicides ✓
 - Not affected by insecticides ✓
 - Crops have lower water requirements ✓
 - Better adapted to the environment/region ✓
- (Any 2) (2)
- 4.5.5 **Reason for the resistance against the use of GM's**
- Health risks ✓
 - Environmental risks ✓
 - Ethical/socio-economic concerns ✓
- (Any 1) (1)
[35]
- TOTAL SECTION B: 105**
GRAND TOTAL: 150