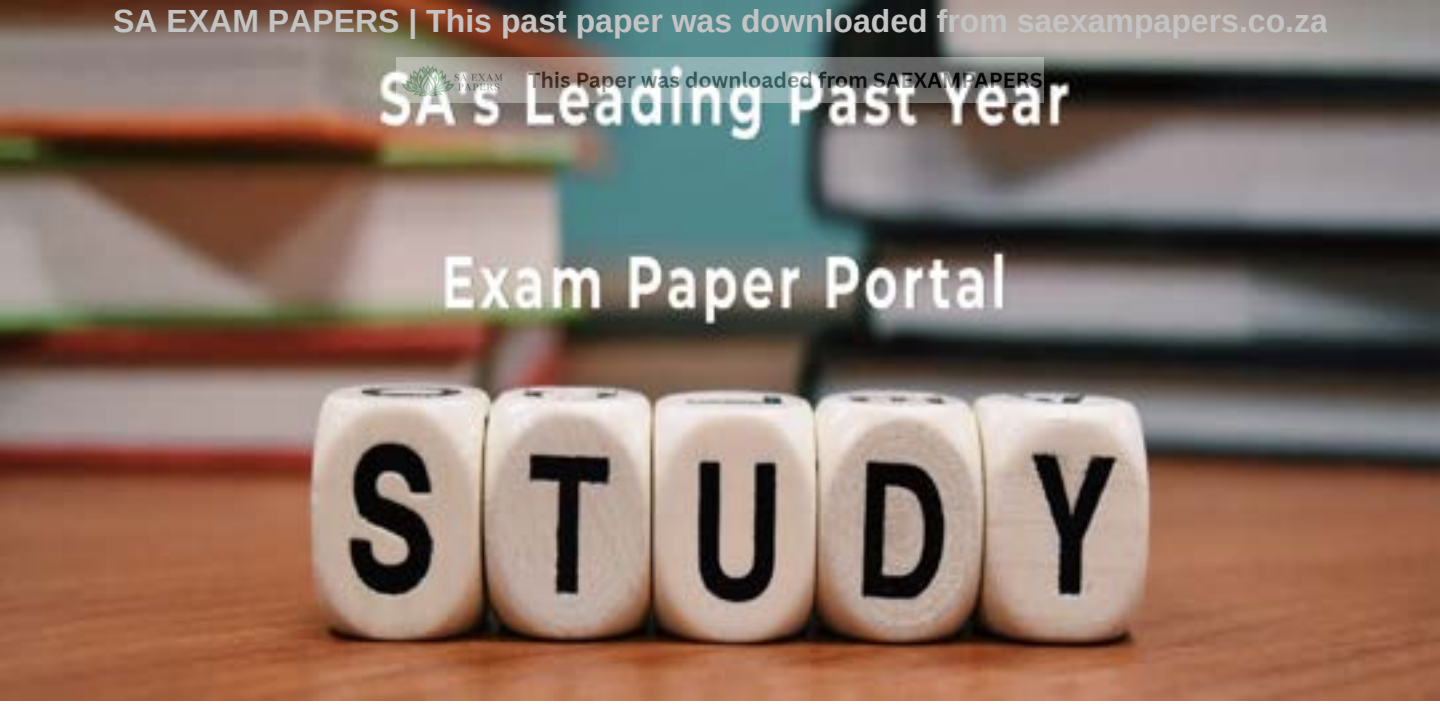

Province of the
EASTERN CAPE
EDUCATION

Iphondo leMpuma Kapa: Isebe leMfundo
Provinsie van die Oos Kaap: Departement van Onderwys
Porafensie Ya Kapa Botjahabela: Lefapha la Thuto

NATIONAL SENIOR CERTIFICATE

GRADE 12

SEPTEMBER 2025

AGRICULTURAL SCIENCES P2
MARKING GUIDELINE

MARKS: 150

This marking guideline consists of 9 pages.

SECTION A

QUESTION 1

1.1	1.1.1	C ✓✓		
	1.1.2	C ✓✓		
	1.1.3	B ✓✓		
	1.1.4	D ✓✓		
	1.1.5	C ✓✓		
	1.1.6	C ✓✓		
	1.1.7	D ✓✓		
	1.1.8	A ✓✓		
	1.1.9	C ✓✓		
	1.1.10	B ✓✓	(10 x 2)	(20)
1.2	1.2.1	D ✓✓		
	1.2.2	F ✓✓		
	1.2.3	C ✓✓		
	1.2.4	B ✓✓		
	1.2.5	E ✓✓	(5 x 2)	(10)
1.3	1.3.1	Eco-labelling ✓✓		
	1.3.2	Interest ✓✓		
	1.3.3	Hybrid ✓✓		
	1.3.4	Epistasis ✓✓		
	1.3.5	Prepotency ✓✓	(5 x 2)	(10)
1.4	1.4.1	Niche ✓		
	1.4.2	Balance sheet ✓		
	1.4.3	Selection ✓		
	1.4.4	Aneuploidy ✓		
	1.4.5	Retroviral vectors ✓/viral vectors	(5 x 1)	(5)

TOTAL SECTION A: 45

SECTION B

QUESTION 2: AGRICULTURAL MANAGEMENT AND MARKETING

2.2 2.1.1 **Identification of concepts**

(a) Selling ✓ (1)

(b) Marketing ✓ (1)

2.1.2 **Main focus of concept B and duration of planning in A**

C – The focus is on customers' needs/wants ✓ (1)

D – Short term planning ✓ (1)

2.2 2.2.1 **Guidelines for packaging fresh agricultural produce.**

- The package must identify and provide useful information ✓
- The package must be recyclable and biodegradable ✓
- The container should enclose the produce ✓
- The package must be protected from mechanical damage ✓
- The material used must not contain chemicals that may be toxic ✓
- The package must be clean, dry and undamaged, not import any foreign tastes or odour or no visible signs of fungus growth. ✓

(Any 2 x 1) (2)

2.2.2 **TWO functions of marketing from the passage.**

- Storage ✓
- Transportation ✓ (2)

2.2.3 **THREE ways the farmer can use to promote agricultural produce.**

- Advertising using mass media (newspapers, television, radio, magazine, bus hoardings and Billboards) ✓
- In-store promotions (taste tests/free samples/give away) ✓
- Direct mailing ✓
- Trade fairs and exhibitions ✓
- Personal selling ✓
- Online /internet ✓

(Any 3 x 1) (3)

2.3 2.3.1 **Identification of lines A and B.**

A Demand ✓ (1)

B Supply ✓ (1)

2.3.2 **Customer related factors that affect demand**

- Consumers preferences ✓
- Number of consumers ✓
- Consumer's disposable income ✓
- Consumer expectations✓

(Any 2 x 1) (2)

2.3.3 **The economic term represented by C.**

- Surplus/oversupply ✓ (1)

2.3.4 **The relationship between price and B**
- When the price of a product increases, ✓ the supply of the product to the market also increases ✓or vice versa. (2)

2.3.5 **Differentiate between market *equilibrium point* and *equilibrium price***
- *Market equilibrium* is the point where quantity supplied is equal to quantity demanded ✓
- *Equilibrium price* is when the price of a product settles at the point where demand is equal to supply ✓ (2)

2.4 **Marketing channels of free marketing systems.**

2.4.1 Stock sale ✓ (1)

2.4.2 Direct marketing ✓ (1)

2.4.3 Farm gate ✓ (1)

2.4.4 Internet marketing ✓ (1)

2.5 **Advantages of free marketing to the entrepreneur.**
- Producers sell where they want ✓
- Producers take the large share as intermediaries are eliminated ✓
- Producers can sell at their own price ✓
- Entrepreneurship is rewarded/encouraged to work harder ✓ (Any 2 x 1) (2)

2.6 **Phases of entrepreneurship**

2.6.1 **C** ✓ **D** ✓ **B** ✓ **A** ✓ (4)

2.6.2 **Reasons for developing a document mentioned in D**
- It assist in determining the feasibility and economic viability of the business idea ✓
- Help in determining the financial needs of the business ✓
- It assist in attracting investors and partners ✓
- It ensure effective business management ✓
- It guides daily operations ✓
- All identification of problems and reduces risks ✓
- Give knowledge about marketing opportunities ✓ (Any 2 x 1) (2)

2.6.3 **The component of a business plan that gives the summary of the business profile**
- Executive summary ✓ (1)

2.6.4 **Strength that gives the business a competitive advantage**
- Good financial position with few debts/good cash flow ✓
- Skilled, competent, and experienced workforce ✓
- Good reputation ✓
- Latest infrastructure and equipment/access to infrastructure ✓

(Any 2 x 1) (2)

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QUESTION 3: PRODUCTION FACTORS

3.1 **Economic characteristics of land**

3.1.1 Indestructability ✓ (1)

3.1.2 Passive factor of production ✓ (1)

3.1.3 Land is durable ✓ (1)

3.2 **TWO ways to improve the productivity of land**

- Improving soil fertility ✓
- Improving water management/ water harvesting techniques/ irrigation ✓
- Changing cropping practices and farming systems ✓
- Restoring land potential ✓
- Farming land more efficiently ✓
- Application of scientific methods ✓ (Any 2 x 1) (2)

3.3 3.3.1 **Problem associated with farm workers from the passage**

- Unskilled workforce/low level of technical skills ✓ (1)

3.3.2 **TWO measures farmers can take to address the problem of low level of skills**

- Sending workers for training courses ✓
- Providing in-service training ✓
- Recruiting skilled workers from other sections ✓
- Provision of bursaries ✓ (Any 2 x 1) (2)

3.3.3 **Impact of unskilled workforce from the paragraph**

- Limit the scope of labour productivity in farms ✓
- Cause workers to be replaced by mechanical aids ✓ (Any 1 x 1) (1)

3.3.4 **Labour legislation that address the problem of unskilled workers**

- Skills Development Act (Act 97 of 1998) ✓ (1)

3.3.5 **TWO economic ways to improve labour productivity.**

- Paying higher salaries ✓
- Paying bonuses/medical insurance and pension ✓
- Providing incentives for workers ✓
- Entering into partnership deals with workers ✓
- Supplying farm products at reduced prices to workers ✓ (Any 2 x 1) (2)

3.4 3.4.1 **Methods of creating capital used by the farmer in the scenario**

- Borrowing from Landbank/loan ✓
- Profit from production ✓ (2)

3.4.2 **Examples of liabilities from the scenario**

(a) Bond on farmland/Long term loan from the bank ✓ (1)

(b) Bank overdraft/Short term loan ✓ (1)

3.4.3 **Balance sheet**

(a) Total value of assets = R1 200 000 + R600 000 ✓
= R1 800 000 ✓ (2)

(b) Net worth of the farm = total value of assets – total value of liabilities ✓ ✓
= R1 800 000 – (R2 000 000 + R100 000)
= – R300 000 ✓ (3)

3.4.4 **Problem of capital associated with borrowing**
- High interest rate/ high cost of borrowing ✓ (1)

3.5 3.5.1 **Identify the type of a budget represented by the table above.**
- Enterprise budget ✓ (1)

3.5.2 **Justification of the answer to QUESTION 3.5.1**
- It is a budget for one particular enterprise on the farm ✓ (1)

3.5.3 **One example of a fixed cost from the table**
- Rent ✓ (1)

3.5.4 **Calculate the total income from broiler enterprise**
- Income from broilers = 200 broiler chickens x R150,00
= R30 000,00 ✓
- Income from chicken manure = 20 bags x R75,00 = R1 500,00 ✓
- Total income = R30 000 + R1 500
= R31 500 ✓ (3)

3.5.5 **Deduce whether the enterprise is viable or not**
- It is viable ✓ because the total income is more than total cost ✓ (2)

3.6 3.6.1 **Identification of the source of risk depicted in the picture.**
- Production risks/technological risks ✓ (1)

3.6.2 **TWO risk management strategies the farmer can apply to control the impact of bad weather on maize production.**
- Diversification
- Risk sharing (Any 2 x 1) (2)

3.6.3 **TWO main management principles**
- Planning ✓
- Implementation ✓
- Control ✓
- Decision-making ✓
- Organising and coordinating ✓
- Communication
- Motivation
- Leading or directing
- Monitoring (2)

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QUESTION 4: BASIC AGRICULTURAL GENETICS

4.1 4.1.1 **The genetic term for the phenomenon explained in the statement.**

- Variation ✓ (1)

4.1.2 **TWO environmental causes affecting variation**

- Soil factors ✓
- Topography ✓
- Climate (Temperature/rainfall) ✓
- Pests and diseases ✓
- Sunlight ✓
- Diet/nutrition ✓
- Shelter ✓ (Any 2 x 1) (2)

4.1.3 **Definition of genetic concepts**

(a) **Phenotype** is the visible or observable characteristics of an individual ✓ (1)

(b) **Heredity** is the transfer of characteristics from parents to their offspring (1)

4.2 4.2.2 **Punnet square showing genotype of F_2 offspring**

♀ / ♂	B	W
B	BB	BW
W	BW	WW

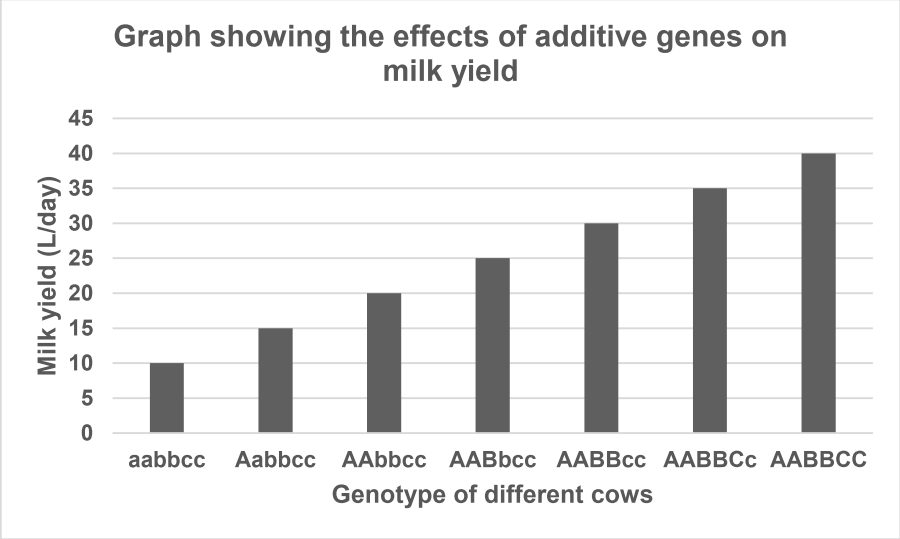
Marking criteria

- Correct male gametes ✓
- Correct female gametes ✓
- Correct genotype of offspring ✓
- Punnet square populated with gametes and offspring ✓ (4)

4.2.3 **Determine the phenotypic ratio of the F_2 offspring as a percentage**

- 25% black : 50% grey : 25% white ✓✓ (2)

4.3 4.3.1 **Bar graph showing the effects of additive genes on milk yield in dairy cattle**



Marking guide for the bar graph

- Correct caption ✓
- Variable on y-axis correctly labelled and alibrated (Milk yield) ✓
- Variable on x-axis correctly labelled and calibrated (Genotype of different cows) ✓
- Units indicated on y-axis (L/day) ✓
- Bar graph ✓
- Accuracy (80% + correctly plotted) ✓ (6)

4.3.2 **Relationship between number of additive genes and milk yield.**

- As the number of additive genes increases ✓ the average milk yield produced by the cow also increases ✓ (2)

4.3.3 **Genes of the cow that would be ideal for selection and the reason**

- AABBCC, ✓ because it is the one with the highest milk production. ✓ (2)

4.4 4.4.1 **Name the breeding system illustrated in the picture above**

- Inbreeding ✓ (1)

4.4.2 **Reason**

- Inbreeding involve mating of closely related animals/ full siblings are allowed to breed ✓ (1)

4.4.3 **TWO disadvantages of inbreeding**

- Cause a loss of genetic variation ✓
- The offspring are more susceptible to diseases ✓
- Leads to inbreeding depression ✓
- Increases the expression of lethal genes ✓ (Any 2 x 1) (2)

4.4.4 **TWO reasons why animal breeders recommend breeding of two animals not closely related to each other**

- Because it produces progeny with high heterosis or hybrid vigour ✓
- Because it increases genetic variation ✓
- Because it is a rapid economic way to improve a profitable characteristic in the herd ✓
- It produces progeny that are more resistant to diseases ✓

(Any 2 x 1) (2)

4.5 4.5.1 **Advise the piggery famer whether they should select the characteristic for breeding**

- Should not be selected ✓

Justification

- There are few chances that the characteristic will be passed on to the offspring during breeding/slaughter weight has heritability value which is less than 50%. ✓ (2)

4.5.2 **Any TWO selection methods used by animal breeders**

- Family ✓
- Progeny ✓
- Mass ✓
- Pedigree ✓ (Any 2 x 1) (2)

4.6 4.6.1 **TWO other advantages of genetic modification over traditional farming methods**

- GM is very precise/accurate or specific ✓
- GM is less time consuming ✓
- Production of vaccines is very suitable ✓ (2)

4.6.2 **State TWO aims of genetic modification in animals**

- Improving production characteristics such as growth rate and milk production ✓
- Improving food quality ✓
- Producing products for human therapeutic use ✓
- Producing industrial or consumer products such as fibres ✓ (2)

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TOTAL SECTION B: 105
GRAND TOTAL: 150