



Province of the
EASTERN CAPE
EDUCATION

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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 F₂ 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 ✓

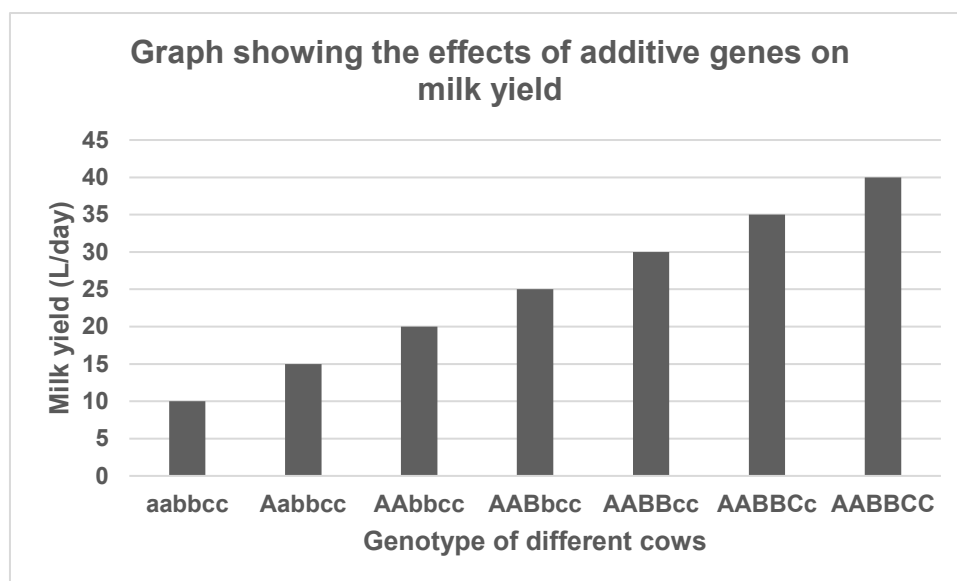
(4)

4.2.3 **Determine the phenotypic ratio of the F₂ 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 farmer 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