



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

AGRICULTURAL SCIENCES P2

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MEMORANDUM

MARKS: 150

This memorandum consists of 9 pages.

SECTION A**QUESTION 1**

1.1

1.1.1	A	B	C	✓✓
1.1.2	A	✓✓	C	D
1.1.3	A	✓✓	C	D
1.1.4	A	B	C	✓✓
1.1.5	A	B	✓✓	D
1.1.6	A	✓✓	C	D
1.1.7	A	B	C	✓✓
1.1.8	A	B	✓✓	D
1.1.9	A	✓✓	C	D
1.1.10	✓✓	B	C	D

(10 x 2) (20)

1.3

- 1.3.1 Diversification ✓✓
 1.3.2 Standardisation ✓✓
 1.3.3 Insurance ✓✓
 1.3.4 Complete dominance ✓✓
 1.3.5 Mutation ✓✓

(5 x 2) (10)

1.2

- 1.2.1 F ✓✓
 1.2.2 H ✓✓
 1.2.3 A ✓✓
 1.2.4 D ✓✓
 1.2.5 J ✓✓

(5 x 2) (10)

1.4

- 1.4.1 Free ✓
 1.4.2 Price ✓
 1.4.3 Permanent/full-time ✓
 1.4.4 Polygenes ✓
 1.4.5 Continuous ✓

(5 x 1) (5)

TOTAL SECTION A: 45

SECTION B**QUESTION 2: AGRICULTURAL MANAGEMENT****2.1 Broiler production****2.1.1 FOUR marketing elements**

- Product/service✓
- Pricing✓
- Placement/distribution of product ✓
- Promotion/advertising✓
- Human resource✓

(Any 4) (4)

2.1.2 FOUR aspects of farm management

- Planning/ ✓
- Co-ordination/organising✓
- Decision making ✓
- Control /monitoring ✓
- Motivation✓
- Market research/market survey ✓

(Any 4) (4)

2.1.3 THREE characteristics of successful entrepreneur

- Creativity and innovation ✓
- Risk orientation ✓
- Leadership and good human relations/management oriented✓
- Positive attitude ✓
- Perseverance✓
- Commitment/motivation✓
- Reward/market driven✓
- Decision maker✓

(Any 3) (3)

2.2 Business planning**2.2.1 TWO questions to ask before starting a business**

- Is there a market for the goods or services you want to offer? /Is the type of product feasible/viable? /Do you have consumers?✓
- Do you have skills you need to start and run the business?✓
- Do you have the resources (human/capital/time) necessary or can you acquire resources to start a farming business? ✓

(Any 2) (2)

2.2.2 FOUR main areas of a good business plan

- Name of business/partners/partnership✓
- Summary of business plan/ strategy✓
- Production plan✓
- Management plan/time management plan ✓
- Sales and marketing plan✓
- Financial plan✓
- Reasons for success of business✓

(Any 4) (4)

2.2.3 Reason for including a business plan

- It indicates all the financial details✓ i.e. how much is needed for the business, how it will be spent and its income✓
- Provision for possibilities✓profit/repayments /level of possible risk✓
- Viability✓details of the business budget over a period of time is indicated✓

(Any 1) (2)

2.3 Marketing system

2.3.1 Free marketing.✓ The vendor is selling directly to the consumer✓ (2)

2.3.2 TWO possible risks

- Theft/safety concerns✓
- Fluctuating prices/supply and demand✓
- Perishability✓
- Lack of storage✓
- Lack of transport✓
- Lack of market/product does not sell✓
- Weather conditions✓
- Regulatory changes✓
- Competition✓
- Health of vendor✓

(Any 2) (2)

2.3.3 THREE disadvantages of free marketing system

- Exploitation by consumers✓
- Price fluctuations✓
- Lack of cooperation between producers and consumers can lead to oversupply and lower prices✓
- Marketing costs are high ✓
- Complicated system to manage✓
- Expert knowledge is needed for this marketing/highly specialised✓
- Producer spent more time on marketing✓
- Producer has less bargaining power✓
- Producer runs a greater risk✓
- Highly competitive✓

(Any 3) (3)

2.4 Supply and demand

2.4.1 R20,00✓ (1)

2.4.2 Motivation for increased supply of fruit

- The quantities supplied will increase from A (200) to B (400). ✓
- The equilibrium price will decrease. ✓
- Lower prices due to a larger supply resulting in higher demand. ✓

(3)

2.4.3 Explanation on inelasticity of agric products over short period

- Producers cannot increase production quickly✓
- Even if the prices increase due to biological/seasonal nature✓
- Production takes time and crops need to ripen✓

(Any 2) (2)

2.4.4 **Price stabilisation through processing**

- The products can be stored for a longer period ✓
- The producer can sell modified (value-added) products for a higher price/products gain value (higher prices)✓
- It is not limited to a season/no limitations ✓
- More income for the farmer✓
- The market for the product is enlarged✓
- Products are mostly preserved/longer shelf life✓
- Fewer products will perish which will increase income. ✓

(Any 3) (3)
[35]

QUESTION 3: PRODUCTION FACTORS AND MANAGEMENT

3.1 **Commercial farming**

3.1.1 **THREE production factors in the case study**

- Land ✓
- Capital ✓
- Management✓
- Labour ✓

(Any 3) (3)

3.1.2 **Tabulation of forms of assets**

LIFE SPAN	FORMS OF ASSETS
Short term	Floating/working(money/savings/payments/crops /vegetable sunflower) ✓
Medium term	Movable(equipment/tractor/planter)✓
Long term	Fixed(land/plot/farm)✓

(3)

3.1.3 Capital is expensive or interest/capital is scarce✓ – lease arrangement/savings/own savings/hiring of equipment✓

(2)

3.1.4 **TWO ways of creating capital**

- Through savings/ /worked in motor vehicle industry ✓
- Produced vegetables/sunflower production ✓
- Hired/rented out equipment/contractor✓

(Any 2) (2)

3.2 **Production factors**

3.2.1 **Production factor**

Management ✓ – coordinates production activities/management task/ planning✓

(2)

- 3.2.2 **TWO ways of improving productivity of land**
- Water provision/irrigation ✓
 - Adapting to scientific methods of production/pooling of resources like machinery, acquisition of fertilizers chemicals – weed or pest)✓
 - Applying indigenous knowledge systems (organic/biological farming practices)✓
 - Consolidation of uneconomical/small farm units✓ (Any 2) (2)
- 3.2.3 **Efficient planning**
- (a) Day-to-day planning must be done:**
- so that each worker knows exactly what is required from him/her on a particular day/motivates workers✓
 - avoid overloading and crisis situations/even distribution of tasks✓ (2)
- (b) Efficient mechanisation should include:**
- the replacement of labour by a capital investment✓
 - provision of more technology for strenuous work✓
 - faster completion of tasks✓
 - more growth opportunities for workers/technology skills and knowledge gained by labourers✓ (Any 2) (2)
- 3.2.4 **TWO strategies to apply for awareness against HIV/Aids**
- Exposure to information/ talk shows/media✓
 - Conduct HIV/Aids awareness workshops and training✓
 - Create access to treatment for sexually-transmitted infections✓
 - Access to anti-retroviral drugs/get tested/government programmes✓
 - Access to condoms✓ (Any 2) (2)
- 3.3 **Record keeping**
- 3.3.1 **Financial statement**
Balance sheet/asset liability statement✓ (1)
- 3.3.2 **Purpose of financial statement**
It indicates the summary of financial status/liquidity of a farm✓ at a specific point in time/particular date or time✓ (2)
- 3.3.3 **Definition of net value**
- The value that remains when all the debt is deducted✓ from total assets in the farm at a time. ✓
- OR**
- The difference between the value of your assets✓ and the value of your liabilities ✓ (2)
- 3.3.4 **Net value calculation**
 $187\ 300 - 96\ 600 = 90\ 700$ ✓ (2)
- 3.3.5 **Distinction between loan and grant**
- **Loan:** money borrowed from a financial institution✓ and repaid with interest✓
 - **Grant:** money given for free by funders✓ and not to be paid back✓ (4)

3.4 Graphs on production output**3.4.1 The name of the farm that is represented by graph B**

- The farm Polani✓
- **Reason:** The farm shows an increase in production due to good stock management practices/not practicing overgrazing/not keeping too many animals on the land✓ (2)

3.4.2 TWO possible causes for the decrease in production output

- Overgrazing/trampling/over utilization of natural resources ✓
 - Soil erosion is visible/fertile topsoil has been removed ✓
 - Soil degradation has occurred due to overutilization✓ (Any 2) (2)
- [35]**

QUESTION 4: BASIC AGRICULTURAL GENETICS**4.1 Genetically modified foods**

4.1.1 **Response rate (%)** = $40/60 \times 100$ ✓
= 66, 67% **or** 66, 7% **or** 67%✓ (2)

4.1.2 (a) Statement 2✓ (1)

(b) Statement 1✓ (1)

4.1.3 Summary of the results of the survey

- Knowledge about GM foods/In statement 1 the majority answered no/35 answered no and 5 answered yes ✓
- Dangers about GM foods/In statement 2 the majority answered no/are for/do like GM foods✓ (2)

4.1.4 TWO benefits of GM foods

- Higher yield/sustainability of food supply✓
- Reduce the need for chemical spraying/herbicides/pesticides✓
- Tolerant to extreme conditions(cold, drought) ✓
- Longer shelf life✓
- Better flavour, colour, texture and nutritional value✓ (Any 2) (2)

4.2 Cross of pure-breds

- 4.2.1
- 24 Black ✓: 8 Brown✓
Or
75% black✓: 25% brown✓
Or
 - 3 black ✓: 1 brown✓ (2)

4.2.2

✓	Parents	B	b ✓
	B	BB	Bb ✓
	b	Bb	bb

One mark for Punnett square

One mark for both genotypes of parents

One mark for all offspring are correct

(3)

4.2.3 3✓: 1✓ **OR** 3 black✓ : 1 brown✓ **OR** 75%✓:25%✓

(2)

4.3 Variation & Selection

4.3.1 Natural selection✓

(1)

4.3.2 **TWO important uses of variation in breeding**

- Improvement of existing breeds/cultivars/selection of parent stock ✓
- Bring about/introduce new breeds/cultivars✓
- Brings about evolution✓

(Any 2)

(2)

4.3.3 **Influence of heritability of characteristics**

- The higher the heritability of characteristics,✓ the quicker the improvement of breeding programme✓

(2)

4.3.4 **How to use index values**

- Individuals with values above 100 would be selected✓ for they are better than the average✓

(2)

4.4 Cloning

4.4.1 **Reason for removal of 2nd nucleus**

- Only the egg cell is needed without the nucleus✓ and no chromosomes (DNA) needed✓ **OR**
- The donor nucleus will be inserted✓ and only one nucleus can exist in the cell✓

(2)

4.4.2 **Process of cell division**

Mitosis✓

(1)

4.4.3 **Reasons why Dolly does not to have any other characteristics**

- The nucleus with DNA/genes/chromosomes from the second donor sheep✓has been removed✓

(2)

4.4.4 **TWO benefits of cloning in agric livestock industry**

- Improves the advances in breeding ✓
- More sustainable food production ✓

(2)

4.5 Snapdragon plants**4.5.1 Type of dominance**

Incomplete dominance✓

(1)

4.5.2 Genotypes represented by:A - $F^R F^R$ ✓B - $F^R F^W$ ✓C - $F^W F^W$ ✓

(3)

4.5.3 Phenotypic ratio of the F_2 generation

- 1:2:1✓✓

OR

- 1 red: 2 pink: 1 white✓✓

OR

- 25%: 50%:25%✓✓

(2)

[35]**TOTAL SECTION B: 105**
GRAND TOTAL: 150