



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

**NATIONAL
SENIOR CERTIFICATE**

GRADE 12

AGRICULTURAL SCIENCES P2

FEBRUARY/MARCH 2015

MEMORANDUM

MARKS: 150

This memorandum consists of 10 pages.

SECTION A**QUESTION 1.1**

1.1.1	A✓✓
1.1.2	B✓✓
1.1.3	D✓✓
1.1.4	C✓✓
1.1.5	B✓✓
1.1.6	D✓✓
1.1.7	C✓✓
1.1.8	A✓✓
1.1.9	A✓✓
1.1.10	D✓✓
(10 x 2) (20)	

QUESTION 1.2

1.2.1	E ✓✓
1.2.2	D ✓✓
1.2.3	A ✓✓
1.2.4	G ✓✓
1.2.5	C ✓✓
(5 x 2) (10)	

QUESTION 1.3

1.3.1	Entrepreneurs✓✓
1.3.2	Productivity/effectiveness ✓✓
1.3.3	Diversification ✓✓
1.3.4	Di-hybridism ✓✓
1.3.5	Genetic modification/ manipulation/engineering ✓✓
(5 x 2) (10)	

QUESTION 1.4

1.4.1	Segmentation ✓
1.4.2	Marketing chain ✓
1.4.3	Perishability ✓
1.4.4	Depreciation ✓
1.4.5	Prepotency ✓
(5 x 1) (5)	

TOTAL SECTION A: 45

SECTION B**QUESTION 2: AGRICULTURAL MANAGEMENT AND MARKETING****2.1 Marketing outlets****2.1.1 Marketing outlets illustrated in A and B**

A -Farm gate/stall✓

B -Auction✓

(2)

2.1.2 The letter of the marketing outlet to which each of the following statements refer(a) **Products are sold at lower price**

A ✓

(b) **It is easily accessible to small-scale farmers**

A ✓

(c) **Price can be higher than expected**

B ✓

(d) **Marketing costs are reduced**

A ✓

(4)

2.1.3 The marketing system represented by A and B

- Free marketing✓

(1)

Reason – Produce sold directly to consumers✓

(1)

2.2 Emerging farmer**2.2.1 TWO entrepreneurial skills**

- Innovative ✓
- Creative ✓

(2)

2.2.2 Justification

- Innovative: realisation of youth unemployment by the farmer/
potential of the area to start a business✓
- Creative – started a small scale factory✓

(2)

2.2.3 TWO possible advantages of securing a contract

- Protection against price fluctuation✓
- Guaranteed market✓
- Eliminating/cutting out the middleman/intermediary/agent✓

(Any 2)

(2)

2.2.4 **Source identified by the farmer**

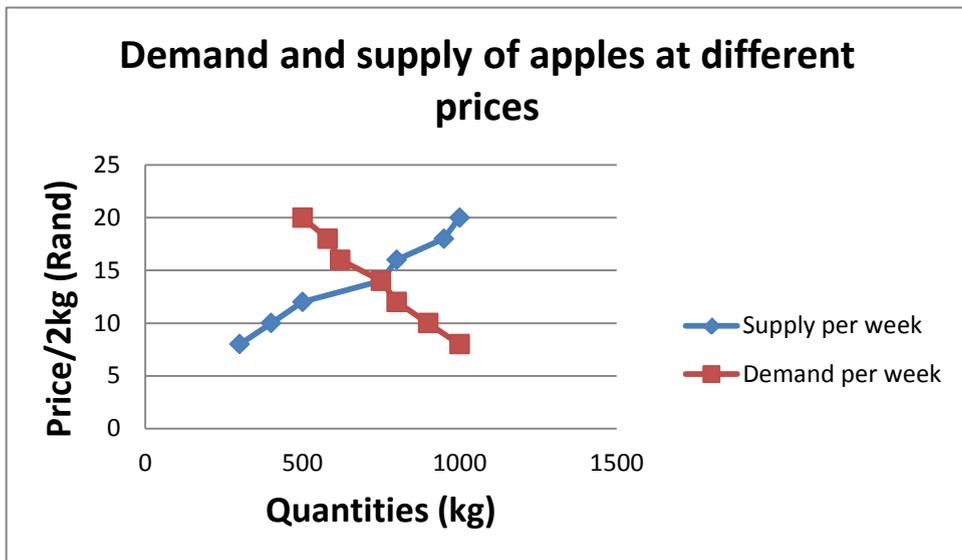
- (a) Availability of peaches/good supply of peaches✓ (1)
- (b) Unemployed youth✓ (1)
- (c) Adequate infrastructure✓ (1)

2.2.5 **Statement implying that the enterprise was a success**

- Production rose from 100 bottles to 1500 bottles per day✓
- Secured a contract with local wholesalers ✓ (Any 1) (1)

2.3 **Supply and demand of apples**

2.3.1 **Graph on the supply and demand of apples**



Criteria/rubric/marketing guidelines

- Correct heading ✓
- X-axis – correct calibrations and labelled (Price) ✓
- Y-axis – correct calibrations and labelled (Quantity)✓
- Units. (Rand and kg) ✓
- Accuracy/correct plotting ✓
- Line graph ✓ (6)

2.3.2 **Equilibrium price of apples**

- R14.00 ✓ (1)

- 2.3.3 **Deduction on availability and price of apples**
- Demand doubles at price R18.00: $580 \times 2 = 1160$ ✓
 - Supply increases by 20%: $\frac{20}{100} \times 950 = 190$ ✓
 - $190 + 950 = 1140$ ✓
 - There will be shortage of apples/demand outstrips supply✓
 - The price will increase✓ (5)
- 2.4 **Marketing channels.**
- 2.4.1 **Most sustainable market for the mutton from the list provided**
- Large supermarket chains✓ (1)
- 2.4.2 **TWO reasons to support answer in QUESTION 2.4.1**
- Supply to large supermarkets is guaranteed✓
 - There is more profit✓ (2)
- 2.4.3 **Market that holds the highest security risk**
- Local people who buy directly from the farm✓ (1)
- 2.4.4 **Justification**
- No guarantee of demand ✓ (1)
- [35]**

QUESTION3: PRODUCTION FACTORS

- 3.1 **Labour management**
- 3.1.1 **TWO Tasks per labour**
- (a) **Permanent**
- Inspection of watering points✓
 - Feeding of stud rams✓
 - Dosing of sheep✓
 - Counting of sheep and records✓ (Any 2) (2)
- (b) **Temporary**
- Shearing of sheep✓
 - Upgrading of dams and watering troughs✓ (2)
- 3.1.2 **ONE task that needs computer skills**
- Feeding of stud rams✓
 - Dosing of sheep✓
 - Counting of sheep and records✓ (Any 1) (1)

- 3.1.3 **The most non-repetitive task performed by the labourers**
 • Upgrading of dams and watering troughs✓ (1)

3.2 **Labour contract**

3.2.1 **ONE statement addressing a Labour Act.**

- (a) **Occupational Health and Safety**
 • Supply of protective clothing✓ (1)
- (b) **Basic Conditions of Employment Act.**
 • Working hours✓
 • Conditions for termination✓
 • Wages and salaries✓ (Any 1) (1)
- (c) **Labour Relations Act.**
 • Contributions towards Unemployment Insurance Fund/
 UIF✓
 • Affiliation to trade unions and right to strike✓ (Any 1) (1)

3.2.2 **TWO benefits of UIF to farm workers**

- Payment of farm workers when out of work✓
- Payment of female farm workers while on maternity leave✓ (2)

3.3 **Land as a production factor**

- 3.3.1 **Economic characteristics**
A – Agricultural land is limited✓ (1)

Justification
 Good agricultural soil used for non-agricultural purposes✓ (1)

- 3.3.2 **TWO ways through which the economic characteristic impacts on the productivity of the land**
 • Reduction of land due to the growing population ✓
 • poses a pressure to produce more ✓
 • and that results to overutilization which in the long run will have a detrimental effect on productivity ✓ (Any 2) (2)

3.3.3 **TWO ways to increase the productivity of land**

- Adapting to scientific methods✓
- Irrigation✓
- Consolidating uneconomic farm units✓

(Any 2) (2)

3.4 **Capital as a production factor**

Types of capital	Example	Source of capital
Fixed✓	Dam/ irrigation system/land✓	Loan ✓
Movable✓	Cattle/bakkies✓	Inheritance✓

- One mark for redrawing the table✓

(7)

3.4.2 **Problems associated with capital**(a) **Buying three bakkies instead of one**

Over-capitalisation✓

(1)

(b) **Loan through a financial institution which will be paid over a ten year period**

- High interest rate✓

(1)

(c) **Investing money on product which could be lost due to natural disasters**

High risk factor✓

(1)

3.5 **Strategic farming management**3.5.1 **Steps in strategic management**

A - vision ✓

B - goal ✓

C - mission✓

D - objective✓

(4)

3.5.2 **THREE benefits of the programme**

- Improved food security✓
- Improved welfare and livelihood/better living standards✓
- Skills development✓

(3)

3.5.3 **ONE skill to anticipate and deal with challenges**

- Problem solving skill✓

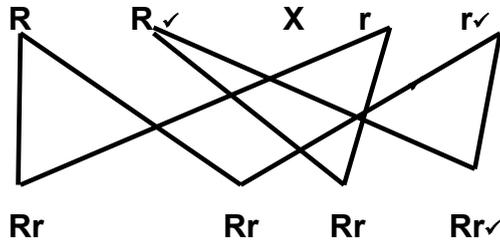
(1)

[35]

QUESTION4: BASIC AGRICULTURAL GENETICS

4.1 Genetic crossing

4.1.1 The genetic crossing



or

♂	r	r ✓
♀	R	Rr
R	Rr	Rr
R ✓	Rr	Rr ✓

✓ Use of square

(4)

4.1.2 Calculate the percentage of the black offspring

- $\frac{4}{4} \times 100$ ✓
- = 100%✓

(3)

4.1.3 The number of the offspring with a homozygous gene pair

- 0/zero/nil/none✓

(1)

4.1.4 Probability to have a red calf

- RR ✓

(1)

4.2 Estimated Breeding Value (EBV)

4.2.1 Calculation of EBV/ the genetic gain

$EBV = (\text{Animal Weight} - \text{Average Herd Weight}) \times \text{heritability}$ ✓

$52,5 \text{ kg} - 47,5 \text{ kg} = 5,0 \text{ kg}$ ✓

$5,0 \text{ kg} \times \frac{85}{100} = 4,3 \text{ kg}$ ✓

$EBV = + 4,3 \text{ kg}$ or $4,3 \text{ kg}$ ✓

(4)

- 4.2.2 **The implication of the value**
- Offspring will have a slaughter weight of 51,8 kg✓
 - The offspring will be 4,3 kg heavier than the flock average✓
- (2)
- 4.3 **Plant improvement**
- 4.3.1 **Identification of the process illustrated above**
- Genetic modification/GM/manipulation/engineering✓
- (1)
- 4.3.2 **TWO main potential risks of GMO**
- Food safety✓
 - Environmental issues✓
 - Socio-economic effects ✓
- (Any 2) (2)
- 4.3.3 **The organism labelled C**
Transgenic/GMO✓
- (1)
- 4.3.4 **THREE Characteristics of genetically modified crop**
- Herbicide resistance✓
 - Insect resistance✓
 - Resistance to harsh environmental conditions✓
 - Improved nutritional value/starch/vitamins✓
 - Modified/improved quality✓
- (Any 3) (3)
- 4.4 **Variation**
- 4.4.1 **Importance of variation**
- Brings about new cultivars ✓
 - with improved characteristics ✓
- (2)
- 4.4.2 **TWO genetic causes of variation**
- Mutation ✓
 - Recombination of genes ✓
 - Crossing over of chromosomes/meiosis ✓
- (Any 2) (2)
- 4.4.3 **Types of variation**
- **Continuous variation** - complete range of characteristics from one extreme to another✓
 - **Discontinuous variation** - has a few clear-cut or distinct forms with no intermediate forms in between✓
- (2)
- 4.4.4 **Selection**
- Process of choosing individuals✓
 - with desirable characteristics for breeding purpose✓
- (2)

4.5 Animal breeding**4.5.1 Identification of the breeding method**

- Crossbreeding✓ (1)

4.5.2 THREE benefits to farmer B

- New breeds developed✓
- Animals will adapt better in varying conditions/better vitality✓
- Animals will be more resistant to diseases✓
- High mass gain in relation to food intake✓
- Leads to heterosis/hybrid vigour✓ (Any 3) (3)

4.5.3 A possible advantage of this breeding method to Farmer A

- Making money by selling bulls/sells to farmer B✓ (1)
- [35]**

TOTAL SECTION B: 105
GRAND TOTAL: 150