basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

AGRICULTURAL SCIENCES P2

NOVEMBER 2010

MEMORANDUM

MARKS: 150

This memorandum consists of 11 pages.

SECTION A

QUESTION 1.1

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

(10 x 2) (20)

QUESTION 1.2

1.2.1	**D ✓✓**
1.2.2	**E ✓✓**
1.2.3	**I ✓✓**
1.2.4	**C ✓✓**
1.2.5	**G ✓✓**

(5 x 2) (10)

QUESTION 1.3

1.3.1 Vision ✓✓

1.3.2 Marketing chain or channels/Supply chain/Demand chain/Agri-business Chain/Distribution chain ✓✓

1.3.3 Capital ✓✓

1.3.4 Variation/Continious variation ✓✓

1.3.5 Dominance ✓✓

(5 x 2) (10)

QUESTION 1.4

1.4.1 Control / Monitoring / Supervision ✓

1.4.2 Standardisation ✓

1.4.3 Floating capital /Working capital/ Production capital/Trading capital ✓

1.4.4 Seasonal /Temporary / Part time ✓

1.4.5 Prepotency ✓

TOTAL SECTION A: 45

SECTION B

QUESTION 2

2.1 Marketing system for amadumbe

2.1.1 THREE advantages of free marketing system

- Producers sell where they please ✓
- Consumers buy where they please ✓
- Consumers buy when they please ✓
- Producers sell when they please ✓
- Producers can sell at their own price ✓
- Consumers can buy bargains ✓
- Sales are usually for immediate cash ✓
- There is usually very little delay in payment ✓
- Producers/entrepreneurs are stimulated to work hard ✓
- Production of quality products is encouraged ✓
- Entrepreneur shows initiative and drive ✓
- Go-between / intermediaries are eliminated ✓ (Any 3) (3)

2.1.2 THREE ways for solving the problem of oversupply of amadumbe

- Processing of the produce that is in excess / Value adding ✓
- Creation of storage facilities ✓
- Establishment of local, national and international markets / pool marketing system ✓
- Promotion and advertisement of the product ✓
- Diversification/utilising more or other production enterprisers ✓
- Hedging ✓
- Dumping / reducing the price very drastically ✓
- Create more channels of distribution ✓ (Any 3) (3)

2.1.3 FOUR entrepreneurial skills that are required to run the business

- Commitment ✓
- Creativity✓
- Vision ✓
- Financial skills✓
- Motivation ✓
- Courage✓
- Risk management ✓
- Innovation✓
- Hard-working ✓
- Staying power ✓
- People skills/ human relations /cooperation with people ✓
- Technical proficiency ✓
- Decision making skills ✓
- Recordkeeping skills ✓
- Control skills ✓

(Any relevant management skills**)** (Any 4 x 1) (4)

2.2 Cotton export trends

2.2.1 May ✓ (1)

2.2.2 From 250 - 280 tons ✓ (1)

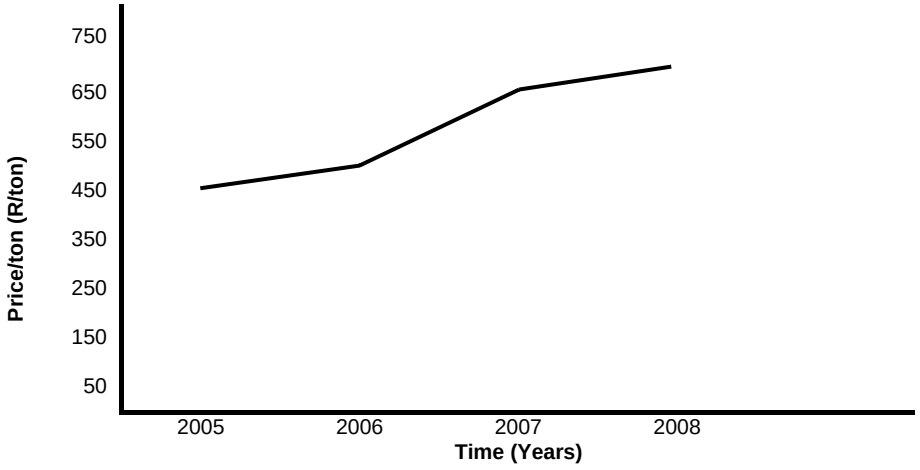
2.2.3 There would be a surplus of cotton / the price for cotton would decrease / export would be performed at a loss ✓✓ (2)

2.2.4 Factors determining supply:
- Price of cotton✓
- Production costs/profit margin of the product ✓
- Other competitive products ✓
- Nature/weather/climate ✓
- Technology ✓
- Possibility of increasing the supply of goods and products ✓
- Knowledge ✓
- Fashion ✓
- Demand for the product ✓
- Period of production
- Stability of product ✓ (Any 4) (4)

2.3 Sugar cane plantation

2.3.1 Line graph & rubric:

Heading: The graph that represents the relationship between the price of sugar cane from 2005 to 2008



Checklist:

Criteria	Correct/Yes (1 mark)	Incorrect/No (0 mark)
Correct heading	1	
Line graph used	1	
Correct values	1	
Labeled axes	1	
TOTAL	**4**	

(4)

2.3.2 demand✓
supply✓ (2)

2.3.3 There was a surplus/oversupply/supply larger than demand ✓
That results in a lower increase in the price of sugar cane ✓
Lower profitability ✓ (Any 2) (2)

2.4 Financial statements in egg production

2.4.1 Farmer A Profit: = Income – Expenditure
= R37 300 – 33 500✓
= R3 800 ✓

Farmer B Profit: = Income – Expenditure
= R32 200 – 33 500✓
= - R1 300 ✓ (4)

2.4.2 Farmer A✓– made profit✓ (2)

2.4.3
- Income – sales of livestock✓
- Expenditure – operating expenses (layers, feeds, electricity, gas, egg trays, veterinary care, maintenance) ✓
- Profit – gain or loss ✓ (3)

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QUESTION 3

3.1 Farm management

3.1.1 Factors that need to be combined in farm management
- Production/physical resources / Environment / Land ✓
- Staffing/human resources / Labour ✓
- Finances / Capital ✓
- Marketing ✓ (4)

3.1.2 Planning / Monitoring / Control ✓ (1)

3.1.3 External influences that may affect the farm as a business
- Political environment/politics ✓
- Global economic environment/economy ✓
- Social environment/society/Effect of HIV/AIDS/Culture / Religion/lifestyle choices ✓
- Legal environment/law/legislation/justice✓
- Natural disasters/Extreme climatic conditions ✓
- Profitability ✓
- Ethics ✓
- Environmental sustainability ✓
- Competition from other sectors ✓
- Technological forces ✓ (Any 2) (2)

3.1.4 THREE economical characteristics of land
- Can be bought and sold ✓
- Appreciates over time (good investment) ✓
- Has a production potential which influences the market value ✓
- Is indestructible / ✓
- It is connected to the law of diminishing returns ✓
- Good land is limited ✓
- Different production capacities / restrictedness ✓
- Is durable / soil is permanent / long lasting ✓
- Limited to a specific environment / economic situation / fixed ✓
- Availability of agricultural land is limited ✓ (Any 3) (3)

3.2 Farm worker equity schemes

3.2.1 Scheme launched
- Farm Worker Equity Scheme ✓ (1)

3.2.2 Benefits of the scheme:
- Labourers are now shareholders ✓
- Qualify for grants ✓
- Attend training / Skills development ✓
- Team building skills ✓
- Financial skills ✓ (Any 2) (2)

3.2.3 Lack of skill/unskilled labour force/lack of training✓ (1)

3.2.4 Corresponding Act
- Skills Development Act ✓ (1)

3.2.5 Skills needed for management
- Management skills ✓
- Human relation skills/Interpersonal skills / Team building skills✓
- Financial skills ✓ (Any 2) (2)

3.2.6 Labour legislation
- Basic Conditions of Employment / Labour relations Act ✓ (1)

3.2.7 Type of labourers at Leliefontein
- Permanent / fixed labourers✓ – they live on the farm / employed full time basis / only permanent labour are shareholders / qualify for grants ✓ (2)

3.3 Vacancies

3.3.1

CANDIDATE	QUALIFICATION LEVEL	MANAGEMENT SKILLS	TECHNICAL SKILLS
A	3 / good ✓	3 / good ✓	1 / weak ✓
B	1 / weak ✓	1 / weak ✓	3 / good ✓

(6)

3.3.2 (a) A✓ – have good qualifications and management skills✓
(b) B ✓– good in technical skills✓ (4)

3.3.3 Candidate A✓ (1)

3.4 Processing of agricultural produce

3.4.1 Capital is expensive/interest is payable/ high risk ✓
Capital is scarce ✓ (Any 1) (1)

3.4.2 (a) C ✓ (1)
(b) B ✓ (1)

3.4.3 Better price for your product/higher income ✓
More sustainable market/consumers use this product ✓
Because of value adding ✓
Perishability is being reduced / increased shelf life ✓
Introduces variety / more choice is added ✓ (Any 1) (1)
[35]

QUESTION 4

4.1 Research on Bt maize cultivars

4.1.1 Punnet square for crossing of the two cultivars

	A	a
a	Aa	aa
a	Aa	aa

Use the following checklist:

Criteria	**Yes/ Correct (1 mark)**	**No/ incorrect (0 mark)**
Heterozygous gametes placed correctly	1	
Homozygous gametes placed correctly Gametes correctly placed	1	
50% Aa offspring visible	1	
50% aa offspring visible	1	
Total	**4**	

(4)

4.1.2 Definition of concepts

(a) Genotype – the genetic make up /code/alleles/composition of an organism✓✓

(b) Recessive gene – gene that is overshadowed/dominated in a crossing by another factor/gene and becomes less visible/hidden/does not express itself in the offspring ✓✓ (4)

4.1.3 Characteristics of genetically modified maize

- Pest resistance ✓
- Herbicide resistance ✓
- Drought resistance ✓
- Adaptability to environmental conditions ✓
- Disease resistance ✓
- Early maturing to escape harsh conditions
- Longer period of keeping germination ability ✓ (Any 2) (2)

4.2 Cattle breeding by Bapedi people

4.2.1 Cross-breeding ✓ and
animals from different households are used (different breeds) ✓
increase the fertility and production ✓ (Any 1)
OR
Inbreeding ✓ and
Households share the same animals ✓
The households have the same breed of animal ✓ (Any 1) (2)

4.2.2 Plant medicine/traditional/indigenous medicine ✓ (1)

4.2.3 Valued for their fertility and productivity ✓ (1)

4.2.4 Crossbreeding is practiced / Fed with specific fodder that is believed to increase the fertility ✓✓ (2)

4.3 Variation

4.3.1 Internal causes of variation:
Recombination of genes/Mutation/abnormalities ✓
Translocation/Duplication/Inversion/Deletion/Crossing over of chromosomes / Omission ✓
Meiosis ✓
Chance fertilization/random fertilization ✓ (Any 2) (2)

4.3.2 Important roles of variation:
To improve existing breeds/cultivars✓
To produce new breeds or cultivars✓ (2)

4.4 Shorthorn breeding

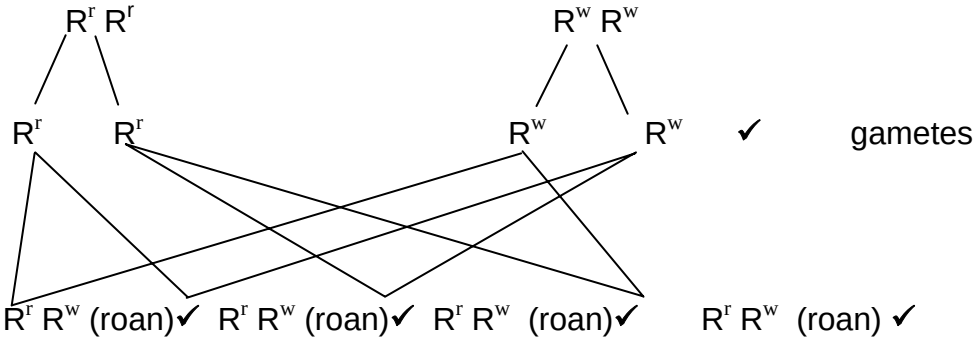
4.4.1 r ✓ - recessive ✓ **OR** (2)
R^w **/ W** ✓ - co-dominant ✓

4.4.2 Rr / R^r R^w / RW ✓ –crossing of red (R / R^r) and white (R^w / W / r)✓ (2)

4.4.3 This question allows for different interpretations by learners:

<u>Co-dominance scenario:</u>

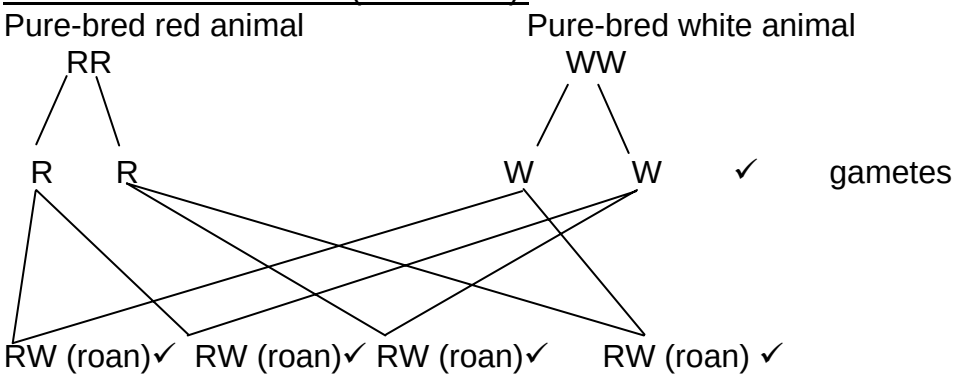
Pure-bred red animal Pure-bred white animal



(Schematic representation) ✓ (6)

OR

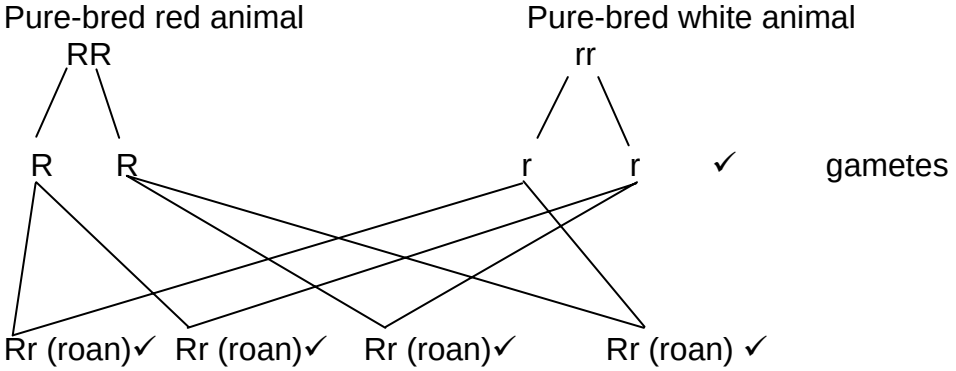
Co-dominance scenario (alternative):



(Schematic representation) ✓ **(6)**

OR

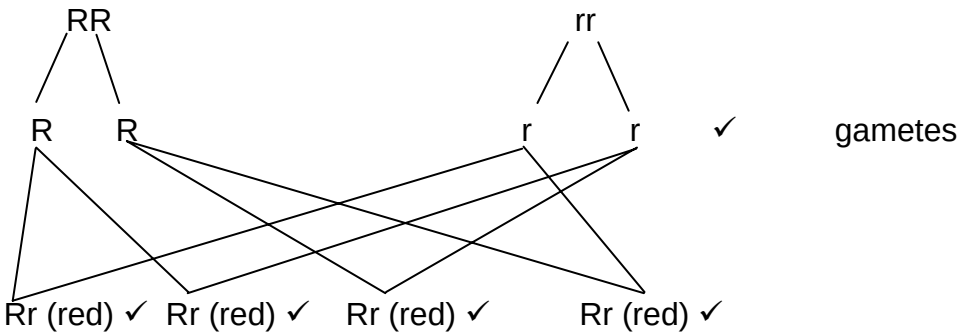
Incomplete dominance scenario:



(Schematic representation) ✓ **(6)**

OR

Pure dominance scenario:



(Schematic representation) ✓ **(6)**

4.5 GMO crop

4.5.1
- A resurrection plant is selected for a desired DNA composition✓
- DNA is extracted from this resurrection plant ✓
- DNA is transferred to a maize plant/GMO plant ✓
- Different techniques are utilised to transfer the DNA (e.g. the use of the Agro-bacterium tumefaciers as a vector) ✓
- The GMO plant has a unique/different DNA composition ✓
- The GMO plant has more desired characteristics ✓ (Any 3) (3)

4.5.2 Benefits of GM crops

- More productive with higher yields ✓
- Resistant to pests and diseases hence reduce the use of chemicals ✓
- Tolerant to harsh conditions / resist hot temperatures ✓
- Longer shelf life and better properties ✓
- Better flavour, colour, texture and nutritional value ✓
- Cheaper and more plentiful food ✓
- Keeping germination ability over a longer period of time / longer viability of seed ✓
- Formation of new substances ✓
- Shorter / Longer growing period / Early / Late maturing ✓

(Any 2) (2)

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TOTAL SECTION B: 105
GRAND TOTAL: 150