basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

SENIOR CERTIFICATE EXAMINATION

AGRICULTURAL SCIENCES P2

2015

MEMORANDUM

MARKS: 150

This memorandum consists of 10 pages.

SECTION A

QUESTION 1

1.1	1.1.1	C ✓✓		
	1.1.2	C ✓✓		
	1.1.3	A ✓✓		
	1.1.4	D ✓✓		
	1.1.5	B ✓✓		
	1.1.6	B ✓✓		
	1.1.7	C ✓✓		
	1.1.8	A ✓✓		
	1.1.9	B ✓✓		
	1.1.10	D ✓✓	(10 x 2)	(20)
1.2	1.2.1	D ✓✓		
	1.2.2	F ✓✓		
	1.2.3	E ✓✓		
	1.2.4	H ✓✓		
	1.2.5	C ✓✓	(5 x 2)	(10)
1.3	1.3.1	Products/produce/supply ✓✓		
	1.3.2	Net worth ✓✓		
	1.3.3	Cash flow ✓✓		
	1.3.4	Variation ✓✓		
	1.3.5	Pedigree ✓✓	(5 x 2)	(10)
1.4	1.4.1	Controlled ✓		
	1.4.2	Leadership ✓		
	1.4.3	Equilibrium ✓		
	1.4.4	Overcapitalisation ✓		
	1.4.5	Red ✓	(5 x 1)	(5)
			TOTAL SECTION A	**45**

SECTION B

QUESTION 2 AGRICULTURAL MANAGEMENT AND MARKETING

2.1 Illustration representing marketing

2.1.1 Identification of the type of marketing

Free marketing ✓ (1)

2.1.2 Explanation:

(a) **Entrepreneur shows initiative and drive**
- The entrepreneur works for him/herself ✓
- The harder he/she works the higher the income ✓ (2)

(b) **Quality of products**
- Only quality produce will sell ✓
- Creates a good reputation ✓
- Ensures sustainable sales ✓ (Any 2) (2)

2.1.3 Guidelines to streamline and improve the marketing chain

- Collect information on marketing opportunities (socio-economic status of target customers within the target market) ✓
- Select a marketing chain ✓
- Identify who should be consulted in the planning process ✓
- Evaluate the level of business organisation along the marketing chain ✓
- Review the services available ✓
- Catalogue past interventions in the region, paying attention to those that had an impact on the selected chain ✓
- Analyse critical points ✓
- Develop a long-term strategic vision that takes marketing prospects and process innovation into consideration ✓
- Design a set of strategies to resolve the critical points ✓

(Any 3) (3)

2.1.4 TWO approaches in the marketing of agricultural produce

- Mass marketing ✓
- Niche marketing ✓
- Multi-segment marketing ✓
- Sustainable agricultural marketing ✓ (Any 2) (2)

2.2 Tree felling business venture

2.2.1 Appropriate term for each of the following statements

(a) Entrepreneurship/business opportunity ✓ (1)
(b) Value adding/processing ✓ (1)
(c) Niche market ✓ (1)
(d) Risk ✓ (1)
(e) Safety ✓ (1)

2.2.2 **THREE benefits of the venture to the farmer**

- Provide income/business/markets/economically viable ✓
- Spreading the risk ✓
- Alien trees are removed/natural veld can recover/receives green points ✓
- More area/space/land available for production ✓ (3)

2.3 **Agricultural cooperatives**

2.3.1 **THREE examples of agricultural cooperatives**

- Production cooperatives ✓
- Service cooperatives ✓
- Marketing cooperatives ✓
- Purchasing cooperatives ✓
- Consumer cooperatives ✓
- Processing cooperatives ✓ (Any 3) (3)

2.3.2 **THREE advantages of agricultural cooperatives**

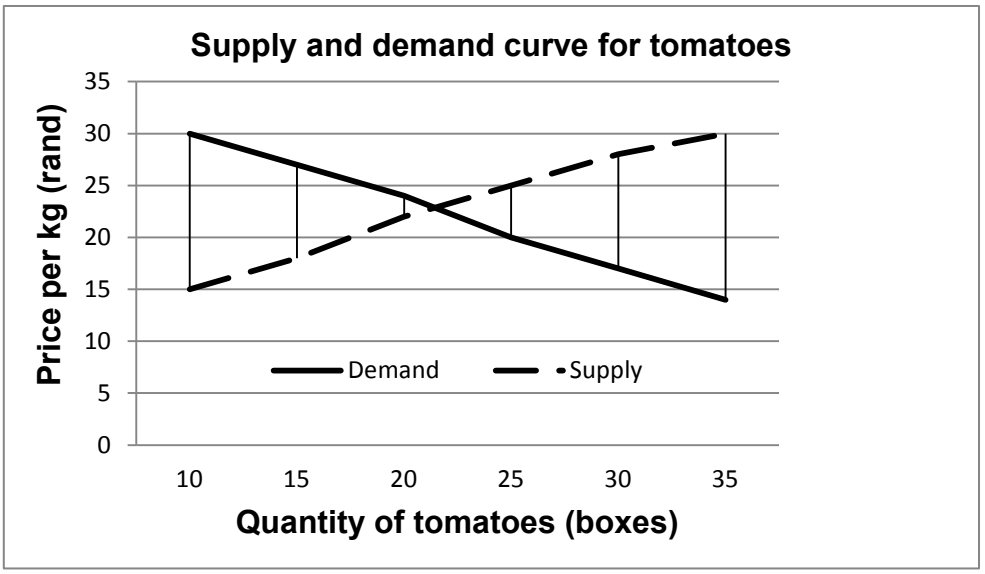
- Meet market requirements for volume/consistent supply ✓
- Potential for growth ✓
- Economics of scale/through pooling resources ✓
- Bargaining power/security/reduce risk ✓
- Access to professional expertise ✓
- Access to better infrastructure ✓
- Eliminating the middle man/intermediaries ✓
- Bulk marketing/sales/purchases ✓
- Branding ✓
- Access to funding ✓ (Any 3) (3)

2.3.3 **THREE principles of agricultural cooperatives**

- Voluntary/open membership/voting rights ✓
- Democratic member control ✓
- Members' economic participation ✓
- Autonomy/independence ✓
- Share information/service to members ✓
- Co-operation among co-operatives ✓
- Concern to the community/public ✓
- Bona fide farmers ✓
- Share risk ✓ (Any 3) (3)

2.4 Supply and demand of tomatoes

2.4.1 Line graph to indicate the supply and demand of tomatoes



Criteria/rubric/memorandum

- Correct heading ✓
- X axis: correctly calibrated and labelled (quantity of tomatoes) ✓
- Y axis: correctly calibrated and labelled (price per kg) ✓
- Both units correct (rand and boxes) ✓
- Accuracy (correct plotting of both curves) ✓
- Line graph ✓ (6)

2.4.2 Relationship between supply and price

- The higher the price, the more the supply/supply increases with an increase in price ✓✓
- The lower the price, the lower the supply/supply decreases with a decrease in price ✓✓
- Direct relationship/proportionality ✓✓ (Any 1) (2)

[35]

QUESTION 3: PRODUCTION FACTORS

3.1 Capital as a production factor

3.1.1 The total debt of the entrepreneur

- R25 000 x 5 ✓
- = R125 000 ✓ (2)

3.1.2 The profit for the first year

- R25 000 x 0,18 ✓
- = R4 500 ✓ (2)

3.1.3 **The profit (as a percentage) for the third year**

- R12 000 ÷ R25 000 ✓ x 100 ✓
- = 48% ✓

OR

- R12 000 x 2 + R4 500 = R28 500 ✓
- R12 000 ÷ R28 000 x 100 ✓
- = 42,11% ✓ (3)

3.1.4 **TWO other ways of obtaining capital**

- Own savings ✓
- Production ✓
- Grants ✓
- Gifts/Sponsors/Inheritance ✓ (Any 2) (2)

3.2 **Labour as a production factor**

3.2.1 **An example of each of the following**

(a) **Casual worker -** Part time cleaner ✓ (1)
(b) **Manager -** Farmer ✓ (1)
(c) **Unskilled worker -** Two general workers/cleaner ✓ (1)
(d) **Skilled worker -** Tractor driver/farmer ✓ (1)

3.2.2 **The legislation/Act that regulates the following:**

(a) **Leave, working hours and deductions**
- Basic Conditions of Employment Act (Act 75 of 1997) ✓ (1)

(b) **Promote economic development and social justice**
- Labour Relations Act (Act 66 of 1995) ✓ (1)

(c) **Health and safety in the work place**
- Occupational Health and Safety Act (Act 85 of 1993) ✓ (1)

3.2.3 **TWO measures to increase the productivity of farm workers**

- Improve economic conditions ✓
- Improve environmental conditions ✓
- Improve working conditions ✓
- Improve educational conditions ✓
- Supervision ✓
- Appreciation for work done/motivation ✓
- Better living conditions ✓ (Any 2) (2)

3.3 **Land as a production factor**

3.3.1 **The production factor visible in the picture above**

Land ✓ (1)

3.3.2 **FOUR economic characteristics of land**

- Primary production factor for all types of production ✓
- It is fixed and with a fixed location/specific environment ✓
- Permanent/durable ✓
- Indestructible ✓
- Physical composition cannot be changed/restrictedness ✓
- Varies in production potential ✓
- Value appreciates over time ✓
- Economic value ✓
- Availability is limited/urban development ✓
- Is subject to the law of diminishing returns ✓
- Passive/needs to combine with other factors ✓ (Any 4) (4)

3.3.3 **THREE functions associated with land**

- Asset (used as collateral in obtaining loans) ✓
- Provides space for agricultural activities ✓
- Provides food/feeding for humans/animals ✓
- Raw products for humans/animals ✓
- Source of minerals ✓ (Any 3) (3)

3.4 **Management**

3.4.1 **Definition of the term *management***

- Effective combination and coordination of human, physical and financial resources ✓
- to achieve a specific goal, usually maximising profits ✓ (2)

3.4.2 **THREE main managerial principles labelled**

- Planning ✓
- Implementation ✓
- Control ✓
- Organization/coordination ✓ (Any 3 for A, B, C) (3)

3.4.3 **THREE strategic management aims**

- Development of vision ✓
- Development of mission ✓
- Setting goals and objectives ✓ (3)

3.4.4 **Responsible person for the overall management of the farm**

Farm manager/farmer/owner ✓ (1)

[35]

QUESTION 4: BASIC AGRICULTURAL GENETICS

4.1 Crossing a ram and an ewe

4.1.1 The type of crossing
- Dihybrid crossing ✓ (1)

4.1.2 Reason for the answer to QUESTION 4.1.1
- Two/2 genetic factors/characteristics/genes/traits ✓are involved in crossing/breeding ✓ (2)

4.1.3 The ratio of the phenotype in F_2 generation
- 9:3:3:1 ✓ (1)

4.1.4 FOUR possible phenotypical combinations
- Long and fine wool ✓
- Long and coarse wool ✓
- Short and fine wool ✓
- Short and coarse wool ✓ (4)

4.1.5 The economic importance of this crossing
- Long and fine wool can be produced ✓
- Wool with the highest economic value ✓
- Pass these good characteristic to the offspring ✓
- Hybrid vigour/heterosis ✓ (Any 2) (2)

4.2 GMO's

4.2.1 Definition of genetic modification
- Technique of changing the characteristics of an organism ✓ by inserting genes from another organism into its DNA ✓

OR

- Process of manipulating characteristics and functions of the original gene of an organism ✓
  By introducing foreign DNA ✓ (2)

4.2.2 THREE advantages of GM crops
- Environmental benefits/fewer insecticides/pesticides used ✓
- Health benefits/improve taste/nutritional value of plants ✓
- Economic benefits/yields are higher/mature quicker ✓
- Resistant to insects/herbicides ✓
- Can tolerate harsh environmental conditions ✓
- It is a faster process ✓
- More precise ✓
- Not limited to crossing of species that can interbreed ✓
- Produce pharmaceutical crops ✓
- Prolongs shelf life ✓ (Any 3) (3)

4.2.3 **TWO potential risks of GM crops**
- Environmental risks ✓
- Health risks/cancer/diseases ✓
- Socio-economic risks ✓ (Any 2) (2)

4.2.4 **Reason for modifying maize, rice and potatoes**
- Sustained provision of food to promote food security/staple food for developing countries ✓ (1)

4.2.5 **TWO techniques used in the genetic modification of plants**
- Bacterial/agro-bacterium tumefaciens viral carriers ✓
- Biolistics/gene gun ✓
- Calcium phosphate precipitation ✓
- Electroporation ✓
- Gene silencing/splitting ✓
- Lipofection ✓
- Micro-injection ✓
- Gene slicing ✓ (Any 2) (2)

4.3 **Normal distribution curve used in the selection of animals**

4.3.1 **Deduction of the animal group to be selected**
- C ✓ (1)

4.3.2 **Reason**
- Their performance is superior to animals in A and B/ genetically superior/improve vigour ✓ (1)

4.3.3 **Method of selection used for the breeding programme**
- Mass selection ✓ (1)

4.3.4 **Difference between selection and variation:**
Selection
- Choosing individuals with superior characteristics ✓
- for breeding purposes ✓ (2)

Variation
- Differences in characteristics ✓
- between individuals of the same species/breed ✓ (2)

4.3.5 **Selection method used**
(a) Family selection ✓ (1)
(b) Progeny selection ✓ (1)

4.4 **Breeding systems**

4.4.1 **Distinction between inbreeding and crossbreeding**
Inbreeding
- Mating of animals closely related than the average of the breed ✓ (1)

Crossbreeding
- Mating of pure bred animals of different breeds ✓ (1)

4.4.2 **Advantages of inbreeding**

- Produces offspring that are genetically uniform/ homogeneous/homozygous ✓
- Allows the development of distinct family lines ✓
- Increases hereditary power/greater prepotency ✓
- Allows breeders to identify/eliminate harmful recessive alleles in a population ✓ (Any 2) (2)

4.4.3 **TWO benefits of a mule**

- It is hardy ✓
- It has a high endurance ✓
- It has better adaptability ✓
- It cannot breed/sterile ✓ (Any 2) (2)

[35]

TOTAL SECTION B 105

GRAND TOTAL 150