



Province of the
EASTERN CAPE
EDUCATION

**NATIONAL
SENIOR CERTIFICATE**

GRADE 12

SEPTEMBER 2014

**AGRICULTURAL SCIENCES P2
MEMORANDUM**

MARKS: 150

This memorandum consists of 10 pages.

SECTION A**QUESTION 1.1**

1.1.1 D ✓✓

1.1.2 C ✓✓

1.1.3 B ✓✓

1.1.4 A ✓✓

1.1.5 A ✓✓

1.1.6 B ✓✓

1.1.7 B ✓✓

1.1.8 C ✓✓

1.1.9 C ✓✓

1.1.10 A ✓✓

(10 x 2) (20)

QUESTION 1.3

1.3.1 Grading/classification ✓✓

1.3.2 Management ✓✓

1.3.3 Entrepreneur ✓✓

1.3.4 Atavism ✓✓

1.3.5 Capital ✓✓

(5 x 2) (10)

QUESTION 1.2

1.2.1 D ✓✓

1.2.2 E ✓✓

1.2.3 A ✓✓

1.2.4 F ✓✓

1.2.5 C ✓✓

(5 x 2) (10)

QUESTION 1.4

1.4.1 processing/value adding ✓

1.4.2 cloning ✓

1.4.3 land ✓

1.4.4 homozygous ✓

1.4.5 co-dominance ✓

(5 x 1) (5)

TOTAL SECTION A: 45

SECTION B**QUESTION 2: AGRICULTURAL MANAGEMENT AND MARKETING****2.1 2.1.1 Marketing system**

Co-operative marketing/pool system ✓ (1)

2.1.2 Principles for formation marketing system

- Voluntary and open membership ✓
- Democratic member control ✓
- Members' economic participation ✓
- Autonomy and independence ✓
- Education, training and information ✓
- Concern for the community ✓ (Any 3) (3)

2.1.3 Reasons for recommending marketing system

- It meets market requirements for volume and consistent supply ✓
- Potential for growth ✓
- Improves economies of scale through pooling resources ✓
- Bargaining power/allows better negotiating for good price ✓
- Access to professional expertise. ✓
- Eliminating the middle man ✓
- Bulk purchasing of inputs is made possible. ✓
- Branding/members can develop a brand for the produce that make them more visible to potential buyers. ✓
- Access to funding. ✓ (Any 3) (3)

2.2 2.2.1 Costs associated with transportation

- Production cost ✓
- Product preparation ✓
- Packaging costs ✓
- Transportation costs ✓
- Product loss cost ✓
- Storage cost ✓
- Processing cost ✓
- Fees, taxes and commissions ✓ (Any 3) (3)

2.2.2 Measures to streamline and improve agricultural business

- Improving road infrastructure in rural areas to facilitate marketing ✓
- Improving access to market information (the internet, cellphones) ✓
- Improving storage facilities for agricultural produce to prevent oversupply. ✓
- Providing access to finance to cover workshop capital and infrastructure needs. ✓
- Using cold storage and refrigerated transport to prevent spoilage and high pricing ✓
- Marketing collectively by combining loads with other producers, to meet market demands for volume and reduce transport cost. ✓
- Processing products close to where they are produced to reduce the transportation costs associated with relatively low-value items. ✓

(Any 3) (3)

2.3 2.3.1 Methods to promote products

- Advertisement ✓ e.g. newspapers/television/radio/magazines/bus boarding/billboards ✓
- In-store promotions ✓ e.g. free taste test/free samples of products/giveaways ✓
- Direct mailing ✓ e.g. email/postal services/mobile phones/mobile messages ✓
- Trade fairs and exhibitions ✓ e.g. agricultural show/mounted stall shows ✓
- Personal selling ✓ e.g. interpersonal influence/promotional presentation on a person-to-person basis. ✓

(Any 2) (4)

2.3.2 Factors to consider in setting price of products

- Cost – When you know how much it costs to produce something you can decide on the minimum price at which you can sell it to make money ✓
- Demand – There must be a demand for what you are selling, or it will not sell, no matter the price. ✓
- Competition – If there are many goods like yours on the market, you have to decide whether to cut your costs or target a specific sector. ✓

(3)

2.4 2.4.1 Interpretation of the law of supply

As the price of a good rises, ✓ the quantity supplied of the good rises. ✓/As the price of a good falls, ✓ the quantity supplied of a good falls. ✓

(2)

2.4.2 Price at which demand is equal to supply

R5,00 ✓

(1)

2.4.3 Quantity of mangoes demanded at R10 and supplied at R10

- A = 2 ✓
B = 12 ✓

(1)
(1)

2.4.4 Factors that affect the demand for mangoes

- Consumer income spending ✓
- Changes in preferences ✓
- Research ✓
- Advertisement ✓
- Number of consumers ✓
- Sociological factors ✓
- Legislation ✓

(Any 3) (3)

2.5 Marketing systems

2.5.1 Stock sales ✓

(1)

2.5.2 Internet marketing ✓

(1)

2.5.3 Contract market ✓

(1)

2.5.4 Farm gate marketing ✓

(1)

2.5.5 Fresh produce markets ✓

(1)

2.6 Reasons for drawing up a business plan

- To test the feasibility and economic viability of your business idea ✓
- To determine your financial needs ✓
- To secure funding for your business, or attract investors. ✓
- To guide daily operations ✓
- To ensure effective business management ✓
- To allow you to foresee problems which reduce risks ✓
- To gain knowledge about marketing opportunities and competitors ✓
- To reposition your business so that you can deal with changes in the market ✓

(Any 2 x 1) (2)

[35]

QUESTION 3: PRODUCTION FACTORS AND MANAGEMENT**3.1 Land****3.1.1 Land is subject to the law of diminishing returns**

If you add successive units of one production factor, √ you will not get a proportional increase in yield. √

(2)

3.1.2 Economic characteristics of land

- Land is limited. √
- The production capacity of land varies widely. √
- The value of land varies √
- The life expectancy of land is unlimited. √
- Land is usually indestructible. √
- It is a primary factor of production. √
- It is a passive factor of production. √
- It is fixed at a particular position. √
- It can be bought and sold. √
- Its value appreciates. √

(Any 2) (2)

3.1.3 Techniques to increase productivity

- Scientific methods like soil analysis, measuring soil water, √ responsible use of pesticides √
- Indigenous knowledge methods like sharing land and organic fertilisers √
- Improving soil fertility √
- Improving water management √
- Changing cropping practices and farming systems √
- Restoring land potential √
- Consolidating uneconomic farm units √

(Any 3) (3)

3.2 Capital and management

3.2.1 Fixed capital √ – reservoir/windmill √

Movable capital √ – cattle √

(4)

3.2.2 Fixed capital – the windmill/standing pipe/well √ is a permanent structure/relatively durable/can be used repeatedly in production. √

(1)

Movable capital – animal/cow/goat √ It is transportable/moveable. √

(1)

3.3 3.3.1 Income and expenditure plan

Estimated income	Estimated expenditure
Sale of sheep R27 500,00 √	Workers' wages R13 400,00 √
Interest from creditors R1 800,00 √	Payment of overdraft R3 700,00 √

(4)

3.3.2 Expected income = R27 500,00 + R1 800,00 = R29 300,00 ✓
Expected expenditure = R13 400,00 + R3 700,00 = R17 100 ✓
Expected profit = R29 300 – R17 100 = R12 200 ✓ (3)

3.3.3 **Overdraft:** It is a negative balance in a bank account ✓ caused by drawing more money than the account holds. ✓ (2)

3.4 3.4.1 **Strategic management components**
• Develop a vision ✓
• Develop a mission ✓
• Set goals and objectives ✓ (3)

3.4.2 **Risk management practices**
• Practice diversification ✓
• Do property and liability insurance on the farm ✓
• Process surplus yields
• Minimise safety risks by doing things properly (Any 2) (2)

3.4.3 **External forces that affect management**
• Natural forces such as drought, hail and floods ✓
• Competition from other farmers ✓
• Demand/market for the product ✓
• Skilled workers/labour force (Any 3) (3)

3.5.1 **Conditions for termination of employment**
A farmer stops a farm worker from working ✓ after a four week written notice has been served to the farm worker. ✓ (2)

OR

A farm worker stops working for a farmer ✓ after a four week written notice has been served to the farmer. ✓ (2)

3.5.2 **Labour legislation applicable to termination**
Labour Relations Act (Act No. 66 of 1995) ✓
Basic Conditions Of Employment Act (Act No. 75 of 1997) ✓ (2)

3.6 **Role played by unions and CCMA**
• The CCMA and the unions assist employees who are victims of unfair dismissals ✓
• Unfair labour practices ✓
• Unfair retrenchments ✓ and
• Dispute resolutions ✓
• Help in forming work place resolutions ✓
• Publish guidelines for dispute resolutions ✓ (Any 1) (1)

QUESTION 4: GENETICS**4.1 Variation****4.1.1 Mutation**

It is an accidental and permanent change ✓ in the DNA sequence of a gene ✓ OR a sudden change ✓ in the genetic material of a cell. ✓ (2)

4.1.2 Causes of mutation

- Climate ✓
- Topography ✓
- Light intensity ✓
- Diseases ✓
- Feeding ✓
- Moving space and exercise ✓
- Recombination of genes ✓
- Crossing over of chromosomes ✓
- Deletion ✓
- Translocation ✓
- Inversion ✓
- Duplication ✓

(Any 3) (3)

4.1.3 Advantages of variation

- It is the foundation of selection and breeding programmes ✓
- For breeding future generations ✓
- To improve crop varieties and livestock breeds over time ✓
- To improve the cost efficiency of their farming practices ✓ (Any 2) (2)

4.2 Genetic modification**4.2.1 Traits popular with farmer in United States**

Crops that resist the herbicide glyphosate ✓
Crops that generate their own internal insecticides ✓ (2)

4.2.2 Potential environmental hazards of genetic modification

- Genes might spread GM crops into wild plants ✓
- Beneficial insects and pests could be killed ✓
- Farmers may use excessive amounts of herbicides in fields where they grow herbicide-resistant crops, leading to damage to soil and water resources ✓
- Pollution to the environment due to use of excessive herbicide

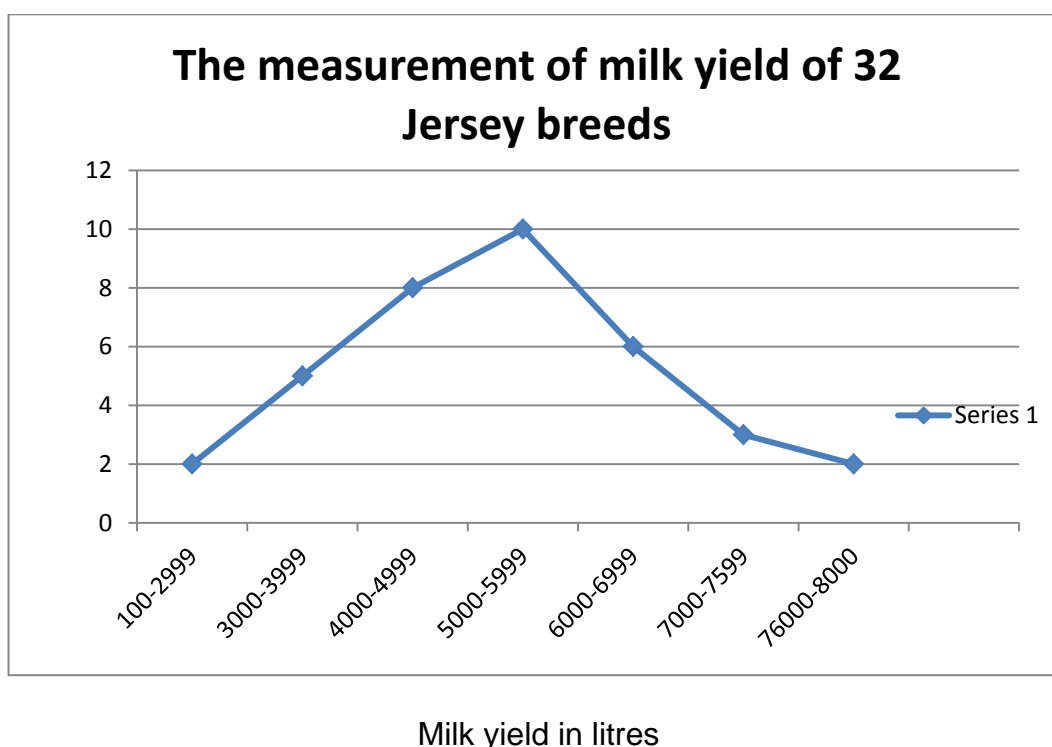
(Any 3) (3)

4.2.3 Why animals are genetically modified

- Improving production characteristics, such as growth rates, milk production, disease resistance and feed conversion. ✓
- Improving food quality, such as milk that will be digested more easily ✓
- Producing products for human therapeutic use, such as medicines or tissue for implantation. ✓
- Producing industrial or consumer products, such as fibres. ✓

(Any 2) (2)

4.3



- 4.3.1 Correct heading/title ✓
 Correct labelling of X-axis and Y-axis ✓
 Correct scaling, using ruler ✓
 Line graph ✓
 Correct plotting on line graph ✓

(5)

- 4.3.2 **Number of cows that produced maximum milk**
 2

(1)

4.3.3 Reasons why cows could be recommended for breeding

- For high income from the sales of more milk. ✓✓
- More production of milk ensures adequate supply of proteins and minerals for consumption. ✓
- More milk production could increase the production of dairy products such as cheese. ✓
- The offspring of the dairy breeds could be sold and used for breeding purposes to emerging farmers. ✓

(Any 2) (2)

4.4 4.4.1 **Monohybrids**
Punnet square showing crosses

	B	b ✓
B ✓	BB	Bb ✓
b	Bb	bb ✓

(4)

4.4.2 **Phenotype ratio in percentages**
 Brown 75%✓ : White 25%✓

(2)

4.5 **Breeding values**

4.5.1 $EBV = \text{Weaning weight} - \text{Average weaning weight} \times 60/100 \checkmark$
 $EBV = (350 - 310) \times 60/100 \checkmark$
 $= 40 \times 0,6 = 24 \checkmark$
 $= 310 + 24 = 334 \text{ kg } \checkmark$

(4)

4.6 **Disadvantage of species crossing**

The offspring of species crossing cannot be used for breeding purposes/offspring are sterile/offspring cannot reproduce. ✓

(1)

4.7 **Two advantages of upgrading**

- New breed is gradually imported into new environment ✓
- Economical way to raise the stock to pedigree level ✓
- Deformities and unwanted characteristics occur less frequently than with inbreeding. ✓
- Faster process than other systems, with rapid results in the first and second generations ✓
- Heterozygous character of the offspring is increased in the process ✓

(Any 2) (2)

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