



Province of the
EASTERN CAPE
EDUCATION

**NATIONAL
SENIOR CERTIFICATE**

GRADE 12

SEPTEMBER 2015

**AGRICULTURAL SCIENCES P2
MEMORANDUM**

MARKS: 150

This memorandum consists of 11 pages.

SECTION A**QUESTION 1.1**

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

QUESTION 1.3

- 1.3.1 Pedigree selection ✓✓
1.3.2 Agricultural Product Standards Act ✓✓
1.3.3 Collateral ✓✓
1.3.4 SWOT analysis ✓✓
1.3.5 Marketing mix ✓✓ (5 x 2) (10)

QUESTION 1.2

- 1.2.1 G ✓✓
1.2.2 J ✓✓
1.2.3 A ✓✓
1.2.4 H ✓✓
1.2.5 B ✓✓ (5 x 2) (10)

QUESTION 1.4

- 1.4.1 Upgrading ✓
1.4.2 undercapitalisation ✓
1.4.3 EBV (Estimated breeding value) ✓
1.4.4 consumer ✓
1.4.5 line breeding ✓ (5 x 1) (5)

TOTAL SECTION A: 45

SECTION B**QUESTION 2: AGRICULTURAL MANAGEMENT AND MARKETING**

- 2.1 2.1.1 **Implications of discounted vegetables to seller**
- More vegetables could be sold at a cheaper price. ✓
 - Fresh vegetables would be stocked because the discounted old stock would be sold out. ✓
 - Vegetables will not stay on shelves for long and will therefore not lose value. ✓ (Any 2 x 1) (2)
- 2.1.2 **The law of demand**
- The lower the price of a product ✓ the higher the demand for the product. ✓ (2)
- 2.1.3 **Factors that influence supply**
- Price – the higher the price, the more producers will be willing to supply. ✓
 - Competitive products – if cheaper products enter the market, the farmer may decide to reduce production. ✓
 - Environmental conditions such as pests and diseases ✓
 - Political instability such as civil wars ✓
 - Demand for the product
 - Cost of production of the goods ✓
 - Possibility of increasing the supply of goods ✓ (Any 3 x 1) (3)
- 2.2 2.2.1 **Identification of the plan**
- Business plan (1)
- 2.2.2 **Three elements of a financial plan**
- The income statement ✓
 - Cash flow summary ✓
 - Balance sheet ✓
 - Capital sales and purchases ✓
 - Financial schedule ✓ (Any 3 x 1) (3)
- 2.2.3 **Intentions of having a business plan**
- To map out the direction of the business
 - To determine your financial needs
 - To gain knowledge about marketing opportunities
 - Know about competitors
 - For better management
 - To establish whether objectives will be met
 - To allow you to foresee problems, which reduces risks (Any 2 x 1) (2)
- 2.2.4 **Problems when drawing up an agri-business plan**
- A vague business plan/unclear/unrealistic goals ✓
 - Incomplete plan ✓
 - Poor research/unrealistic assumptions ✓
 - Cash flow/budget errors ✓
 - Not competitive ✓
 - Not identifying potential risks ✓ (Any 2 x 1) (2)

2.3 2.3.1 Aspects of packaging to consider

- The packaging must identify and provide useful information about the product. ✓
- Packaging material must be recyclable/biodegradable. ✓
- The package must protect the produce. ✓
- The container should enclose the produce conveniently ✓
- Health risk-container may not be used ✓ (Any 2 x 1) (2)

2.3.2 Advantages of processing vegetables

- It is a way of overcoming the over-supply of vegetables ✓
- It reduces wastage of excess produce, especially lower grade fruit and vegetables ✓
- It provides job opportunities ✓
- It increases the value of the product ✓
- It allows for easier packaging and handling of the products ✓ (Any 3 x 1) (3)

2.3.3 Price elasticity of demand ✓ (1)**2.3.4 Factors that affect elasticity of demand**

- Nature of the product ✓
- Availability of substitute products ✓
- Proportion of the consumer's budget spent on the item ✓
- Time period; the more time passes, the more elastic is the demand for a product. ✓ (Any 2 x 1) (2)

2.4 2.4.1 Ways to reduce cost

- By purchasing inputs in great quantities ✓
- Getting big volume discounts ✓ (Any 1 x 1) (1)

2.4.2 Justification of bargaining power by cooperatives

A group of producers will have a better chance than an individual farmer ✓ for negotiating a good price for their products with a buyer. ✓ (2)

2.4.3 Cooperative marketing

Two or more independent organisations/or groups of people ✓ working together to meet their common needs. ✓

Controlled marketing

System in which buying or selling is manipulated/controlled in some way ✓ and producers are forced by the government/bound by law to sell at a stipulated price. ✓ (2 + 2) (4)

2.5 Entrepreneurial processes

- 2.5.1 D ✓ (1)
- 2.5.2 A ✓ (1)
- 2.5.3 C ✓ (1)
- 2.5.4 B ✓ (1)

2.6 Characteristics that make a business less competitive

- Having large debts. ✓
- Lack of management skills. ✓
- Unskilled labour who are not able to operate machinery or keep records ✓
- Being an unknown company without a reputation. ✓
- Having a poor location so your customers cannot access your business easily. ✓
- Stock problems/having too little or too much stock on hand. ✓
- Having outdated and inefficient machinery that costs a lot to maintain. ✓

(Any 1 x 1) (1)

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QUESTION 3: PRODUCTION FACTORS

- 3.1 3.1.1 **Labour Legislation**
 Basic Conditions of Employment Act. ✓
 Skills Development Act. ✓ (Any Order) (2)
- 3.1.2 **Justification of the choice of legislation**
 Basic Conditions of Employment Act
- Stipulated the wage rate/wages paid based on the current rates. ✓ (1)
 - Skills Development Act
 - On-farm training and short courses for labourers. ✓ (1)
- 3.1.3 **Ways to reduce labour cost**
- Through mechanisation ✓
 - Increasing productivity ✓
 - Reducing the labour force ✓
 - Sending workers for training/skills development ✓ (Any 2 x 1) (2)
- 3.1.4 **Reason for labour legislation**
 Legislation is in place to protect farm workers and prevent unfair labour practices on farms. ✓ (1)
- 3.1.5 **Causes of labour shortage**
- Less attractive/bad working conditions ✓
 - Low wages ✓
 - Competition for labour from other industries ✓
 - Migration of labour from rural areas to cities in search of better wages, working conditions and service conditions ✓
 - The impact of HIV and Aids ✓ (Any 2 x 1) (2)
- 3.2 3.2.1 **Two types of capital**
 Long term credit – building/house/land/fence. ✓ (1)
- Medium term capital – horses/animals/planter. ✓ (1)
- 3.2.2 **Problems with capital**
- The capital goods such as the building/land/implements are costly ✓
 - The planter/building/fence may depreciate ✓
 - It is risky to keep the animals because they could die ✓ (Any 2 x 1) (2)
- 3.3 3.3.1 **Items with the most income**
 1 500 cabbage heads ✓
 55 boxes of carrots ✓ (2)

3.3.2 Calculations

Expected income

$$\begin{aligned}\text{Sale of vegetables} &= \text{R8 500} + \text{R5 800} + \text{R4 250} + \text{R900} \\ &= \text{R19 450,00} \checkmark\end{aligned}$$

Expenditure

$$\text{R1 200} + \text{R3 000} + \text{R3 500} + \text{R2 300} = \text{R10 000} \checkmark$$

Income-Expenditure = Profit/Loss

$$\text{R19 450} - \text{R10 000} = \text{R9 450,00} \checkmark \text{ Profit } \checkmark \quad (4)$$

3.3.3 Motivation for commercial farm

- Large scale production \checkmark
- Records of income and expenditure are kept \checkmark
- Farm machinery are used \checkmark
- Scientific farming is practised (large quantities of NPK fertiliser purchased) \checkmark (Any 1 x 1) (2)

3.3.4 Enterprise budget

It is a budget for one particular enterprise, \checkmark for example maize production on a farm. \checkmark (2)

A whole farm budget

It combines all the farm enterprises \checkmark to show the net returns/loss to the farm business. (2) (4)

3.4 3.4.1 Effects of internal forces on a business

- It can strengthen a business \checkmark
- It can hamper a business \checkmark (2)

3.4.2 Internal forces that make a business successful

- The farm's financial position including the amount of debt and cash flow. \checkmark
- Investment in research and development, which can improve efficiency. \checkmark
- Management systems that are in place, especially for financial management. \checkmark
- Available capabilities and competencies of management and the workforce, including production, and marketing. \checkmark
- Products produced (quality, cost and delivery arrangements) and the way operations are run. \checkmark
- Organisational structure and culture \checkmark
- Available resources such as natural resources, equipment, machinery and facilities, and the size and type of farm. \checkmark (Any 3 x 1) (3)

- 3.5 3.5.1 **Scientific methods to increase land productivity**
- Soil analysis to determine fertilisers to use and suitability of crops to plant/testing pH. ✓
 - Measuring ground-water to determine when and how much to use. ✓
 - Responsible use of pesticides. ✓ (Any 2 x 1) (2)
- 3.5.2 (a) Land subject to Law of diminishing returns ✓
- (b) Land is fixed/immovable ✓
- (c) Agricultural land is limited ✓ (3)
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QUESTION 4: GENETICS

4.1 4.1.1 Species crossing ✓ (1)

4.1.2 **Disadvantages of species crossing**

- The offspring cannot reproduce/offspring are often sterile ✓
- Offspring are not good for breeding purposes ✓
- Seldom used/of little practical importance in the animal industry. ✓
(Any 2 x 1) (2)

4.1.3 Cross breeding ✓ (1)

4.1.4 Heterosis/hybrid vigour ✓ (1)

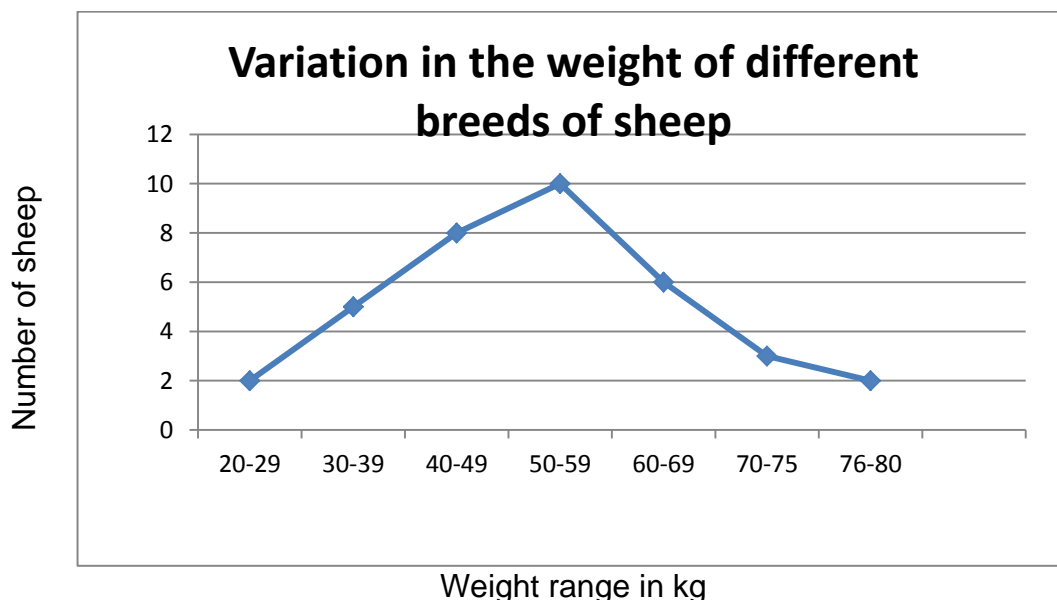
4.2 4.2.1 Genetic modification/genetic engineering/GM ✓ (1)

4.2.2 Electroporation ✓ (1)

4.2.3 **Aims of genetic modification**

- Biofortification/increasing the nutritional value of crops. ✓
- Indirectly improving crop yield by making it easier to manage pests, diseases and weeds. ✓
- Directly improving crop yield by improving tolerance, such as environmental condition. ✓
- Improving commercial properties, such as flavour and shelf life ✓
- Producing pharmaceutical crops that produce proteins, drugs and vaccines for humans. ✓
(Any 3 x 1) (3)

4.3



4.3.1 Correct heading/title ✓
 Correct labelling of X and Y axis ✓
 Correct scaling, using ruler ✓
 Line graph ✓
 Correct plotting on line graph ✓ (5)

4.3.2 Environmental causes of variation in animals

- Diet ✓
- Water ✓
- Shelter ✓
- Climate ✓
- Pest and diseases ✓ (2)

4.3.3 Quantitative ✓ (1)

4.3.4 Quantitative characteristics

- The character is measurable/or can be quantified. ✓
- Can take on a whole series of values like body size/weight/ wool production etc. ✓ (2)

4.4 4.4.1 Dihybrid crosses

		Female gametes			
		BL	Bl	bL	bl
Male gametes	BL	BBLL	BbLl	BbLL	BbLl
	Bl	BbLl	BBll	BbLl	Bbll
	bL	BbLL	BbLl	bbLL	bbLl
	bl	BbLl	Bbll	bbLl	bbll

- Dihybrid punnet square ✓ (1)
- Correct female gametes ✓ (1)
- Correct male gamete ✓ (1)
- Correct crosses of gametes ✓ (1)

4.4.2 Phenotype of offspring in the F₁ generation with **bbll** – white and long ✓ (1)

Phenotype of offspring in the F₁ generation with **BBLL** – black and short ✓ (1)

4.4.3 9:3:3:1 (1)

4.5 Patterns of inheritance

4.5.1 Epistasis ✓ (1)

4.5.2 Incomplete dominance ✓ (1)

4.6 Advantages of cloning

- To produce large numbers of genetically identical animals. ✓
- To produce offspring from high quality animals. ✓
- To preserve and extend proven, superior genetics. ✓
- To achieve high quality meat and dairy products. ✓
- To increase the number of endangered species. ✓ (Any 2 x 1) (2)

4.7 Backcrossing

Crossing of parents' ✓ with their own offspring. ✓

Out crossing

Crossing of a line bred breed ✓ with an unrelated breed. ✓ (2 + 2) (4)
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TOTAL SECTION B: 105
GRAND TOTAL: 150