NATIONAL
SENIOR CERTIFICATE

GRADE 12

MARKS: 150

This memorandum consists of 11 pages.

SECTION A:

QUESTION 1

1.1   1.1.1   B ✔✔
         1.1.2   D ✔✔
   1.1.3   A ✔✔
         1.1.4   C ✔✔
         1.1.5   C ✔✔
         1.1.6   D ✔✔
         1.1.7   D ✔✔
         1.1.8   B ✔✔
         1.1.9   C ✔✔
         1.1.10 B ✔✔   (10 x 2)   (20)

1.2   1.2.1   G ✔✔
         1.2.2   J ✔✔
         1.2.3   H ✔✔
         1.2.4   B ✔✔
         1.2.5   F ✔✔   (5 x 2)   (10)

1.3   1.3.1   Budget ✔✔
         1.3.2   Collateral/fixed asset ✔✔
         1.3.3   Risk ✔✔
         1.3.4   Genetic modification(GM)/engineering/biotechnology ✔✔
         1.3.5   Quantitative ✔✔   (5 x 2)   (10)

1.4   1.4.1   Co-operative/pool ✔
         1.4.2   Bartering ✔
         1.4.3   Entrepreneur ✔
         1.4.4   Depreciation ✔
         1.4.5   Variation/biometrics/EBV ✔   (5 x 1)   (5)

TOTAL SECTION A: **45**

SECTION B

QUESTION 2: AGRICULTURAL MANAGEMENT AND MARKETING

2.1   **The price and the quantity of lambs sold by a farmer over a period of six months**

    2.1.1   **Line graph showing the relationship between the number of lambs sold and the months of the year**

Relationship between the **number of lambs sold** over a **six month period**
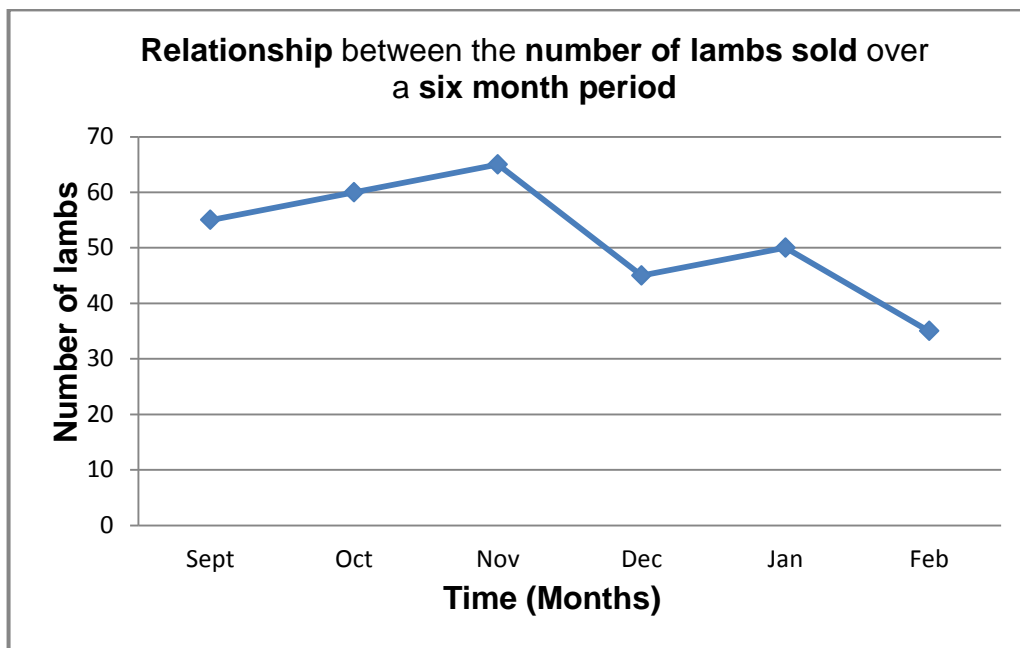
Criteria/rubric/marking guidelines
- Correct heading ✓
- Y - axis –Correct labelled (Number of lambs) ✓
- X - axis –Correct labelled (Sept. - Feb.) ✓
- Correct calibrations of X and Y axe ✓
- Accuracy ✓
- Line graph ✓   (6)

    2.1.2   **Month with the highest income**
- November ✓✓   (2)

    2.1.3   **Marketing strategy**
- Use of a breeding season/planning for marketing stage ✓
- Supply most of their animals during the festive season/December ✓
- Promotion/advertising/market research ✓
- Market animals when the price is the highest ✓   (Any 1)   (1)

    2.1.4   **Calculation of the price per lamb for**
        (a) October: 27kg x R81/kg ✓
                = R2 187 ✓   (2)
        (b) December: 27kg x R110/kg ✓
                = R2 970 ✓   (2)

2.1.5 **Economic reason for a decrease in supply**
- Drop in price in January for lambs ✓
- Biggest demand is over/festive season is over/ withholding stock/speculating for a higher price ✓
- Scarcity of money after the festive season ✓
- The farmer ran out of stock/no stock available ✓ (Any 1) (1)

2.2 **Marketing strategies**

2.2.1 **Marketing system for group 2**
Free marketing/direct system ✓ (1)

2.2.2 **TWO reasons to justification the choice in Question 2.2.1**
- Sold vegetables from door to door/sell at any place/ no middleman ✓
- Individuals responsible for their own marketing ✓
- Sell at their own price ✓ (Any 2) (2)

2.2.3 **Group's marketing strategy**
(a) Group 1 ✓ (1)
(b) Group 2 ✓ (1)

2.2.4 **Reason for a pool marketing system**
- Sold at a fixed price/price control ✓
- Vegetables were combined/stockpile ✓ (Any 1) (1)

2.3 **Diagram of the marketing procedures for an agricultural product.**

2.3.1 **Identification of marketing function**
A: Distribution/transport/delivery ✓
B: Processing/value adding ✓
C: Packaging ✓ (3)

2.3.2 **Differentiation of the price of Product:**
A - Raw product with a **lower** price ✓
D - Processed product with a **higher** price ✓ (2)

2.3.3 **TWO aspects of a SWOT analysis**
- Strengths ✓
- Weaknesses ✓
- Opportunities ✓
- Threats ✓ (Any 2) (2)

2.3.4 **TWO aspect to be included in feasibility study**
- Demand for the final product/market research ✓
- Availability of skilled labour ✓
- Capital investment needed/availability of capital ✓
- Support structures needed/resources/storage facilities ✓
- Distance to/from markets/accessibility ✓
- Operation of plant during the off season ✓
- Profitability ✓
- SWOT analysis ✓ (Any 2) (2)

2.4 **Activities related to the production and marketing of agricultural product**

2.4.1 **THREE activities in the following order:**
- Planning for production ✓
- Soil preparation and planting ✓
- Grading ✓
- Storage ✓
- Distribution ✓
- Sales to consumers ✓ **(Any 3 in a CORRECT ORDER)** (3)

2.4.2 **TWO problems with the distribution during marketing of agricultural products**
- Poor infrastructure/bad roads ✓
- Transportation/wide distribution and distances to markets ✓
- Accidents/theft can cause losses ✓
- High transportation cost ✓
- Spoilage of products in the market chain/perishability ✓
- Products not properly handled/stored ✓ (Any 2) (2)

2.4.3 **Activities related to the standardisation of agricultural products**
Grading ✓ (1)
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QUESTION 3: PRODUCTION FACTORS

3.1   **Contract between an employer and an employee**

3.1.1   **Type of worker signing a contract**
- Permanent/fixed/full time worker ✓   (1)

Justification with reason
- Long term employment/1 February 2011 - retirement ✓✓
- Entitled to some benefits, e.g. annual leave ✓✓   (Any 1)   (2)

3.1.2   **Labour legislation**
   (a) Basic Conditions of Employment Act.
       (Act Number 75 of 1997)
- Duration of contract: 01 February 2011 - retirement or till the contract ends ✓
- Remuneration/Amount ✓
- Terms of employment/leave/working hours: ✓   (Any 1)   (1)

   (b) Occupational, Health and Safety Act.
       (Act 85 of 1993)
- Protective clothing: ✓   (1)

3.1.3   **Aspect that contributes to scarcity of labour:**
- Remuneration of R2 500 ✓
- The industry pay more for skilled labour ✓

Or
- Working hours from 06h00 to 17h00 ✓
- Industry is shorter working hours ✓

Or
- Leave: One week paid leave per annum ✓
- Longer/paid leave period is given to workers in industry ✓

Or
- Protective clothing: None ✓
- Dangerous working conditions ✓   (2)

3.1.4   **HIV impact on the productivity of a farming business**
- Worker would be sick and absent from work ✓
- Lower productivity/worker will work slowly/shorter hours ✓
- Labour shortages/difficult to complete tasks ✓
- Extra financial/cost burden/support on the farmer ✓
- Planning/running the farm becomes more difficult ✓
- Loss of skills/experience ✓   (Any 2)   (2)

3.2   **Diagram representing capital forms**

3.2.1   **Types of capital represented by:**
A **-** movable capital ✓
C **-** fixed/immovable/movable capital ✓   (2)

3.2.2   **TWO examples of floating capital in the farming operation**
- Feeds ✓
- Medication/chemicals ✓
- Cleaning/sanitation substances ✓
- Electricity ✓
- Fuel ✓
- Wages/salaries/cash ✓
- Fertilisers/manure ✓
- Stationery ✓
- Seeds✓   (Any 2)   (2)

3.3   **Information on assets and liabilities on a farm**

3.3.1   **Table and calculation of the net worth of the farm**

✓ Assets	Rand	Liabilities	Rand
Farm	3 500 000	Tractor loan	365 000
Vehicles	275 000 ✓	Overdraft	150 000 } ✓
Cash	50 000	Bond	4 200 000
Buildings	650 000		
Total	**4 475 000** ✓	**Total**	**4 715 000** ✓
Net worth	R 4 475 000 − R 4 715 000 = R − 240 000 or (R240 000 deficit) ✓✓		

Mark allocation/marking guidelines/rubric:
- Redrawing the table with the correct headings
- Assets sorted correctly
- Total of assets
- Liabilities sorted correctly
- Total of liabilities
- Net worth   (7)

3.3.2   **Viability of the farming business**
- Not viable ✓   (1)
  Justification with reason
- Loss/deficit of **–** R240 000/insolvent/bankrupt/liabilities are
  greater than the assets ✓   (1)

3.4   **Fertilizer applied and the quantity of potato produced on piece of land**

     3.4.1   **Economic characteristic shown by the data in the table**
- The law of diminishing returns ✓   (1)

     3.4.2   **Relationship between fertilizer input and yield**
- Potato yield will increase with an increase in fertiliser input until optimum production is reached ✓
- A further increase in fertiliser input result in a decreasing increase of potato yield ✓
- After that production of potatoes will stabilise/remain constant ✓   (Any 2)   (2)

     3.4.3   **TWO measures a farmer can employ to the land in order to be more productive**
- Scientific/precision farming methods/fertiliser/manure/ correct cultivation methods/crop rotation ✓
- Consolidation of small/uneconomic units ✓
- Restoring land potential/resting the land/correct land utilisation ✓
- Responsible application chemicals/pesticides/herbicides ✓
- Irrigation/permanent water supply ✓   (Any 2)   (2)

3.5   **Passage on managerial principles**

     3.5.1   **TWO managerial principles**
- Planning ✓
- Organization/co-ordination ✓
- Decision making ✓
- Control ✓
- Motivation ✓
- Communication ✓
- Leading and direction ✓
- Monitoring ✓
- Implementation ✓   (Any 2)   (2)

     3.5.2   **TWO external forces**
- Legal/legislation/politics ✓
- Economic/marketing environment ✓
- Capital /funding ✓   (Any 2)   (2)

     3.5.3   **Types of essential farm records**
- **(a)** List/record ✓ of assets/all the machinery/equipment/ livestock/other moveable items on the farm ✓   (2)
- **(b)** A record of all the breeding stock ✓ that is used in a particular breeding program and their activities ✓   (2)

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QUESTION4: BASIC AGRICULTURAL GENETICS

4.1   **Dihybrid crossing on horns and hair colour**

      4.1.1   **The genotype of individual number 11 and 14**
            (a) 11 - aaBB ✓ (1)
            (b) 14 - Aabb ✓ (1)

      4.1.2   **The phenotype of individual number 6 and 12**
            (a)   6 - Red and polled/no horns ✓ (1)
            (b) 12 - Black and horned ✓ (1)

      4.1.3   **Phenotype of the offspring between number 6 and 16:**

✓	**Ab**	**Ab** ✓
ab	Aabb	Aabb ✓
✓ **ab**	Aabb	Aabb

            Mark allocation/marking guidelines/rubric
- Punnet square
- Parent 1 gametes
- Parent 2 gametes
- Genotype of offspring (4)

      4.1.4   **Phenotype of the crossing in QUESTION 4.1.3**
- Red and polled/no horns ✓ (1)

4.2   **Breeding systems and technologies**

      4.2.1   **The breeding methods:**
            A. Upgrading ✓
            B. Inbreeding ✓
            C. Crossbreeding ✓ (3)

      4.2.2   **Breeding method for heterosis**
            C/A ✓ (1)

      4.2.3   **TWO disadvantages of inbreeding**
- Loss of vigour/performance/inbreed depression ✓
- Loss of fertility ✓
- Smaller genetic variation ✓
- Increase of lethal genes which can result in death ✓
- Reduced vitality ✓
- Fixation of undesired genes ✓
- Expert knowledge required ✓
- Less resistance to diseases ✓
- Poorly adapted to the environment ✓
- Deformed animals ✓   (Any 2)   (2)

      4.2.4   **Change the enterprise from Brahman to a Bonsmara**
            Upgrading/A ✓ (1)

Nguni cattle with a distinct colour pattern

4.3.1   **Identify this type/mechanism of heredity**
- Co-dominance ✓   (1)

4.3.2   **Explanation of colour combination**
- Both white and red hair fibres are present ✓
- The offspring has the phenotype of both parents ✓
- No intermediate/mixture of colour is formed ✓   (Any 2)   (2)

4.3.3   **Difference between incomplete and co-dominance**
- **Incomplete dominance**
Offspring has a phenotype that is in-between those of the parents ✓
- **Co-dominance**
Offspring has the phenotype/colour of both parents ✓   (2)

4.4   **Techniques to change DNA of tomato plant**

4.4.1   **TWO other methods**
- Micro-injection ✓
- Gene gun/biolistic ✓
- Agro-bacterium tumefaciens ✓
- Electroporation ✓
- Recombination DNA ✓
- Calcium phosphate precipitation ✓
- Gene silencing ✓
- Gene splicing ✓
- Lipofection ✓   (Any 2)   (2)

4.4.2   **TWO disadvantages of DNA modified tomatoes**
- Health concerns/allergies ✓
- Not enough research has been done ✓
- Expensive ✓
- Super weeds develop from tomato pollen ✓
- Religious beliefs ✓   (Any 2)   (2)

4.5   **Differences between continuous and discontinuous variation**
Continuous variation
- There is a complete range of characteristics from one extreme to another ✓
Discontinuous variation
- Characteristics have a few clear-cut forms/no intermediate forms in between ✓   (2)

4.6   **Traditional selection method**

   4.6.1   **Define selection**
   - Process of choosing/identifying specific individuals ✓
   - For their desired characteristics/traits ✓
   - To be used in the production of quality offspring ✓ (Any 2)   (2)

   4.6.2   **Method of selection in the scenario.**
   - Mass selection ✓   (1)

   4.6.3   **THREE characteristic considered for selection**
   - Growth ✓
   - Health ✓
   - Fertility ✓   (3)

   4.6.4   **Aspects to improve phenotype of animals**
   (a) Best bulls for growth/health/fertility were shared ✓   (1)
   (b) Utilizing the best available pastures/keeping them away
        from wet/muddy areas ✓   (1)
                                                                     [35]

                                          TOTAL SECTION B: 105
                                          GRAND TOTAL: 150