



# education

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Department:  
Education  
**REPUBLIC OF SOUTH AFRICA**

**NATIONAL  
SENIOR CERTIFICATE**

**GRADE 12**

**AGRICULTURAL SCIENCES P2**

**MEMORANDUM**

**EXEMPLAR 2008**

**MARKS: 150**

**TIME: 2 Hours**

**This memorandum consists of 9 pages.**

**SECTION A/AFDELING A****Question 1.1/Vraag 1.1**

1.1.1	<b>X<sub>✓✓</sub></b>	<b>B</b>	<b>C</b>	<b>D</b>
1.1.2	<b>A</b>	<b>B</b>	<b>C</b>	<b>X<sub>✓✓</sub></b>
1.1.3	<b>A</b>	<b>B</b>	<b>C</b>	<b>X<sub>✓✓</sub></b>
1.1.4	<b>A</b>	<b>X<sub>✓✓</sub></b>	<b>C</b>	<b>D</b>
1.1.5	<b>A</b>	<b>B</b>	<b>X<sub>✓✓</sub></b>	<b>D</b>
1.1.6	<b>A</b>	<b>X<sub>✓✓</sub></b>	<b>C</b>	<b>D</b>
1.1.7	<b>A</b>	<b>B</b>	<b>C</b>	<b>X<sub>✓✓</sub></b>
1.1.8	<b>A</b>	<b>B</b>	<b>C</b>	<b>X<sub>✓✓</sub></b>
1.1.9	<b>X<sub>✓✓</sub></b>	<b>B</b>	<b>C</b>	<b>D</b>
1.1.10	<b>A</b>	<b>X<sub>✓✓</sub></b>	<b>C</b>	<b>D</b>

**Question 1.2/Vraag 1.2**

1.2.1	<b>F<sub>✓✓</sub></b>
1.2.2	<b>J<sub>✓✓</sub></b>
1.2.3	<b>L<sub>✓✓</sub></b>
1.2.4	<b>E<sub>✓✓</sub></b>
1.2.5	<b>D<sub>✓✓</sub></b>

5x2 (10)

**Question 1.3/Vraag 1.3**

1.3.1	Seasonal labour <sub>✓✓</sub>
1.3.2	Oesophageal groove <sub>✓✓</sub>
1.3.3	Processing / value adding <sub>✓✓</sub>
1.3.4	Silage <sub>✓✓</sub>
1.3.5	Cloning <sub>✓✓</sub>

5x2 (10)

**Question 1.4/Vraag 1.4**

1.4.1	Carotene <sub>✓</sub>	(1)
1.4.2	Antibiotic <sub>✓</sub>	(1)
1.4.3	Fixed <sub>✓</sub>	(1)
1.4.4	Pool <sub>✓</sub>	(1)
1.4.5	Mutation <sub>✓</sub>	(1)

5x1 (5)

**SECTION B****QUESTION 2****2.1 Schematic presentation of energy:**

- (A) Digestible energy: (1)  
Gross energy minus energy lost through the faeces (1)
- (B) Digestible energy minus  
 ■ energy lost in faeces (1)  
 ■ energy lost in urine (1)  
 ■ energy lost in gaseous end products (methane) (1)
- Nett energy:  
 (C) Metabolic energy minus energy lost in heat (Any 5) (1)  
 [5]

**2.2 Case study / Scenario:**

- 2.2.1 Carbon dioxide (1)  
Methane (1)
- 2.2.2 Bloating (1)
- 2.2.3 Planting legumes with grasses together  
Not allowing livestock to graze on wilting pasture  
Licks containing sulphur related nutrients (Any 2) (2)  
[5]

**2.3 Calculations:**

- 2.3.1 A= 20 (1)  
B= 11 (1)  
% maize=  $20/31 \times 100$   
= 64 % (1)  
% Soya =  $11/31 \times 100/1$   
= 35% (1)
- 2.3.2 Pearson square (1)
- 2.3.3
  - Increase growth
  - Improve feed efficiency
  - Improve quality of a feed
  - Increase production of animals
  - Increased resistance to diseases
 (Any 3) (3)  
 [8]

**2.4 Bio-fuels:**

- 2.4.1
- Encourages them to embark on farming
  - More opportunities for financing and government support
  - Encouragement to acquire the necessary skills
  - A growing market for their produce/no over production possibilities
  - More marketing options for their produce
  - A more stable and better price for their produce
  - Less risk for their enterprise
- (Any 2) (2)
- 2.4.2
- (a) Effects on production
- grain / maize production will increase or
  - surplus will be will be directed towards this venture
- (Any 1)
- (b) Effect on fuel price
- stabilize or
  - less increases
- (Any 1) (2)
- 2.4.3
- (a) Graph A  
The price stabilised over time
- (2)
- (b) The fuel price will decrease  
The maize price will decrease
- (2)
- 2.4.4
- Necessary skills:
- communication skills
  - production and operational skills
  - financial management skills
  - record keeping skills
  - decision making skills
  - risk management skills
- (Any 2) (2)  
[10]

**2.5 Protein:**

- 2.5.1 Amino acids
- (1)
- 2.5.2 Bond between the amino-group ( - NH<sub>2</sub>) of an amino acid with the carboxylic group ( - COOH) of the next amino acid
- (2)
- 2.5.3 In a dipeptide only two amino acids are bonded together  
In a polypeptide many (8 in the diagram) amino acids are bonded together
- (2)
- 2.5.4 Kwashiorkor  
Increase the protein intake of these children / protein enriched food
- (2)  
[7]  
**[35]**

**QUESTION 3****3.1 Lactation in cows:**

- 3.1.1 Cow B (1)
- Body mass and feed intake correlates (1)
  - Feed intake is very low and milk production is high (1)
  - Uses its energy reserves for milk production (1)
- 3.1.2 Oxytocin (1)
- 3.1.3
- Gives tissue and glandular material a chance to recover (1)
  - Accommodates process of mating to take place (1)
  - Accommodates cow to gather strength, energy for parturition (1)
  - Ensures that milk production does not decrease (1)
- [8]

**3.2 Structures used in animal production:**

- 3.2.1 **A** – fencing is effective / reasonably easy or fast to erect / last very long and effective to keep animals from the road (2)
- 3.2.2 **C** – easy to erect / fast to change on a daily basis (2)
- 3.2.3 **D** or **E** – available material from the environment is used (2)
- 3.2.4 **F** or **C** – these are temporary methods that would keep the animal in a small area (2)
- 3.2.5 **B** – game are wild and wont run through solid material (plastic fence) (2)
- [10]

**3.3 Schematic representation of value adding:**

- 3.3.1 Product are going through a value adding chain  
Product need to be graded or sorted and cleaned  
Product need to be processed before they get to the consumer  
Retailers is normally part of the marketing chain  
Product need to be transported to consumers (Any 3) (3)
- 3.3.2 Pricing goods
- Determine total cost plus profit margin
  - Profit will be influenced by competition
  - Product need to be priced along the going rate
  - Price in line with what the market will allow you (2)

3.3.3 Accidents (2)  
Delays

3.3.4 **Cost calculation**  
R18.95-R12.15  
=R 6.83 (2)

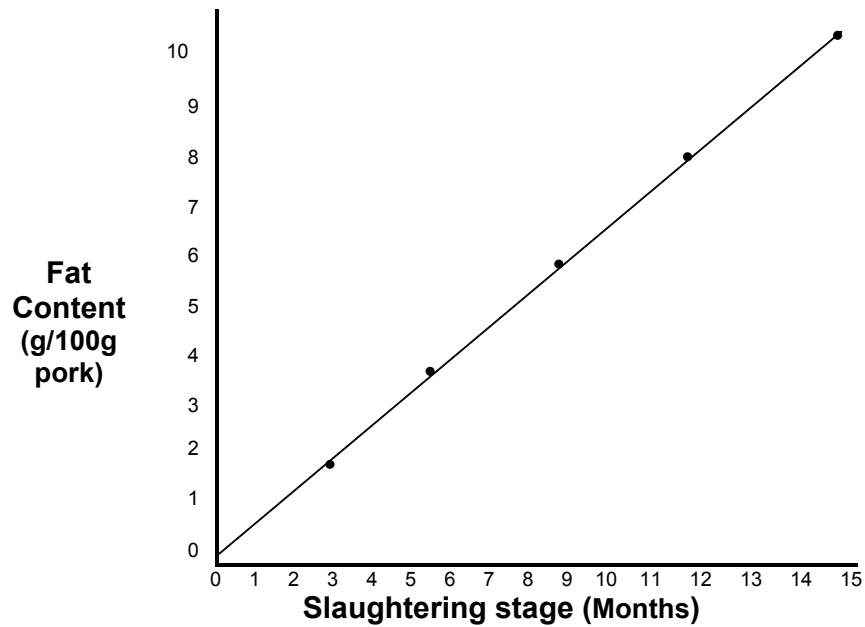
3.3.5 Risks  

- Theft
- Loss (through diseases)

 (Any 1) (1)  
[10]

3.4 **Fat content in pork:**

3.4.1 **Graph to illustrate the fat content in pork against the slaughtering stage**



Mark graph with the following checklist:

Criteria	Yes: 1	No: 0
1. line graph		
2. axis are labelled		
3. points are plotted accurately		
4. units are indicated		

3.4.2 4 – 2 = (4)  
2 g fat / 100g pork (2)

3.4.3 The more the saturated fat, the **higher** the melting point of the fat (fat then a solid at room temperature). (1)  
[7]  
[35]

**QUESTION 4****4.1 Artificial insemination:**

4.1.1 P = Pistilet  
V = Vagina  
B = Bladder (3)

4.1.2 Uterus / inside part of the cervix (1)

4.1.3 Means of communicating to the farmer/inseminator about when to inseminate the cows (1)  
[5]

**4.2 Pasture production:**

4.2.1 Intensive / artificial pastures (1)

4.2.2 Any suitable grass specie / legumes / sorghums (1)

4.2.3 Increase soil fertility /  
Increase organic content of soil /  
Good supply of roughage /  
Contain a lot of protein (nitrogen) /  
Economic nutrition for ruminants (Any 2) (2)  
[4]

**4.3 Alimentary canals:**

4.3.1 FARM ANIMAL 1: Cow  
FARM ANIMAL 2: Fowl (2)

4.3.2 A-**rumen** storage organ, fermentation vessel of organic fraction  
COMPARED TO  
I- **Crop** food is stored and moistened here (2)

4.3.3 **Adult ruminant** and  
REASON: no oesophageal groove  
all four compartments of the stomach fully developed (2)

4.3.4

- Capacity / space / 150-200litres big / large fermentation vessel
- Structurally adapted consists of stratified epithelium
- Densely packed papillae act as heating rods / good temp.
- Anaerobic environment
- Correct pH value
- Wet inside
- Lots of carbohydrates supply food (Any 2) (2)

[8]

4.4 **Supply and Demand (graph):**

- 4.4.1 Curves:  
A demand  
B supply (2)
- 4.4.2 Produce more milk (1)
- 4.4.3 Equilibrium price /point  
A point where the quantity of a product demanded is equal to the supply of that product (2)  
[5]

4.5 **Picture on marketing:**

- 4.5.1
- price
  - product
  - placement and /or
  - promotion (Any 2) (2)
- 4.5.2
- primary research – consulted and observed consumers
  - secondary research – consulted retailers and wholesalers or
  - large market – product used in great quantities by consumers or
  - secure market – product that are not sold by everybody or
  - sustainability – product that are always needed by consumers and
  - looking for a suitable supplier for her product (Any 2) (2)
- 4.5.3 Free marketing: and  
System of marketing where the producer sells directly to a consumer (retailer)  
and the price is determined by supply and demand (Any 2) (2)  
[6]

4.6 **Schematic representation of a crossing:**

- 4.6.1 **Bb**  
The offspring is 50% black and 50% white  
with a BB genotype all the offspring would have been black (3)
- 4.6.2 cross breeding (1)  
[6]



4.7 GMO crops

4.7.1 2002  
Drastic increase in yield (2)

4.7.2 Health risks / too little knowledge on their long-term effect on  
humans / too little long-term research (Any 1) (1)

[3]

**[35]**

**TOTAL SECTION B: 105**

**GRAND TOTAL: 150**