



education

Department:
Education
REPUBLIC OF SOUTH AFRICA

**NATIONAL
SENIOR CERTIFICATE**

GRADE 12

AGRICULTURAL SCIENCES P2

FEBRUARY/MARCH 2009

MEMORANDUM

MARKS: 150

This memorandum consists of 11 pages.

SECTION A**QUESTION 1.1**

1.1.1	A	B	C	X//
1.1.2	X//	B	C	D
1.1.3	A	X//	C	D
1.1.4	A	B	X//	D
1.1.5	A	B	X//	D
1.1.6	A	X//	C	D
1.1.7	A	B	X//	D
1.1.8	A	X//	C	D
1.1.9	X//	B	C	D
1.1.10	A	B	X//	D

(10 x 2) (20)**QUESTION 1.2**

1.2.1	A//
1.2.2	B//
1.2.3	C//
1.2.4	A//
1.2.5	A//

(5 x 2) (10)**QUESTION 1.3**

1.3.1 Blue tongue✓✓

1.3.2 Demand✓✓

1.3.3 Loan / Credit✓✓

1.3.4 Grading✓✓

1.3.5 Glucose✓✓ (5 x 2) (10)

QUESTION 1.4

1.4.1 Urea✓

1.4.2 Secretin✓

1.4.3 Working/Floating/

Production/Short term✓

1.4.4 Capital✓

1.4.5 Heterosis/Hybrid vigour✓

(5 x 1) (5)**TOTAL SECTION A: 45**

SECTION B**QUESTION 2****2.1 Internal parasites of livestock****2.1.1 Identification of internal parasites**

A – Round worm

B – Fluke worm

C – Tapeworm

(3)

2.1.2 TWO parasites that need two hosts to complete their life cycles

Tapeworm

Fluke worm

(2)

2.1.3 TWO economic losses that are caused by internal parasites

Stock losses due to death

Loss of production (meat, wool, milk, feathers, mohair, etc.)

Degrading of carcasses at abattoirs

Danger to human health by parasites requiring intermediate hosts

Expensive costs of controlling them chemically

(Any 2)

(2)

2.2 FOUR services rendered by the state to prevent and control animal diseases and pests**Preventative measures**

Quarantine of imported animals in quarantine stations for six weeks

Quarantine of sick animals on farms for notifiable diseases

Isolation of sick animals to minimise the spread of the disease

Destroying carcasses to prevent the spread of the disease

Controlling the vectors that spread the disease

Vaccination

Dipping animals to prevent tick-borne diseases like heart water

Treatment/Control of the disease

Supply of antibiotics/anthelmintics

Good nursing of sick animals

(Any 4)

(4)

2.3 Formulation of FOUR requirements for a poultry house

The long sides of the building should face north and south to avoid direct summer sun shining into the house

Use wire netting to allow free flow of air/ventilation

The roof should begin 2 m above the ground to minimise ground heat in summer

A double-sloped roof is better than a single-sloped roof for protection against sun and rain

The roof can be made of corrugated iron or thatch to keep it cool in summer and warm in winter

Use concrete floor as it allows easy cleaning when the litter is taken out

(Any 4)

(4)

2.4 THREE groups of micro-organisms that are pathogens

Bacteria

Viruses

Protozoa

Fungi

(Any 3)

(3)

2.5 Production of tomatoes by a group of emerging farmers

- 2.5.1 **ONE reason for high loss of tomatoes in 2007**
 No market to sell the surplus tomatoes harvested in 2007
 There was an over production of tomatoes in 2007
 The climatic factors might have contributed to the high yields in 2007 (Any 1) (1)
- 2.5.2 **ONE production factor which was not fully utilised**
 Movable capital/the two tractors (1)
- 2.5.3 **Types of capital**
 Movable capital – tractors
 Fixed capital – water pump/farmers' houses (Any 1)
 Working capital – seeds/fertilisers/fungicides (Any 1) (3)

2.6 Management and marketing of Mrs Mvubo's farming enterprise

- 2.6.1 **TWO skills needed to manage the farm:**
 Application of knowledge
 Planning skills
 Entrepreneurial skills
 Adapting to changing circumstances/flexibility skills
 Personal and human relations/interpersonal skills (Any 2) (2)
- 2.6.2 **TWO managerial principles for successful farming:**
 Planning
 Organisation and co-ordination
 Decision making
 Control
 Motivation (Any 2) (2)
- 2.6.3 **Identification of ONE factor that makes effective marketing difficult:**
 Poor infrastructure(bad roads, lack of pack houses, etc.)
 Lack of capital to construct roads/to build the infrastructure
 Perishability of the product
 Grading and standardisation of the products
 Ineffective control over production
 Wide distribution of products
 Low value in relation to volume
 Seasonal fluctuation in production (Any 1) (1)

2.7 Genetically modified plant

- 2.7.1 Determine the genetic characteristics of the organism (plant) (1)
- 2.7.2 Plasmid / micro-organism/bacterium (1)
- 2.7.3 DNA which determines the characteristic of a plant is taken from a source (organism) and inserted into another organism to change that organism's genetic structure and characteristics (Any 2) (2)
- 2.7.4 Genetic engineering/GMO technology/Biotechnology (1)

- 2.7.5 **TWO advantages for the crop farmer who uses GMO**
 Higher production
 More resistance to diseases
 More resistance to pests
 More resistance to chemicals (herbicide resistance)
 Better quality products (size, colour, shelf life, taste etc.)
 Adaptation to a particular environment (Any 2) (2)
[35]

QUESTION 3**3.1. Milk production**

- 3.1.1 Colostrum/beestings (1)
 3.1.2 **TWO characteristics of colostrum:**
 Yellowish in colour
 Contains antibodies
 Contains extra nutrients (Any 2) (2)
 3.1.3 8 (eight) weeks (1)
 3.1.4 2 (two) weeks (1)
 3.1.5 **TWO stimuli that affect milk release:**
 Massaging the cow's udder
 Whistling
 Playing a musical instrument to calm the cow (Any 2) (2)
 3.1.6 **TWO measures to ensure maximum milk production:**
 Providing correct nutrition
 Proper control of diseases
 Providing proper housing (Any 2) (2)
 3.1.7 **TWO environmental conditions that affect milk production:**
 Excessive heat/Extreme heat
 Excessive cold/Extreme cold (2)

3.2. Artificial insemination

- 3.2.1 Approximately 18 hours (1)
 3.2.2 6 to 12 hours after signs of oestrus/Inseminate in the afternoon
 when signs were detected in the morning and vice versa (1)
 3.2.3 12 to 14 hours after first signs of oestrus (1)
 3.2.4 Good quality bull/semen is used (1)
 3.2.5 **TWO ways of preventing the spread of diseases through AI:**
 Use of sterilised/clean apparatus/tools
 Use of good quality semen
 Avoiding injuries (Any 2) (2)

3.3 Maize production and price

- 3.3.1 Interaction/Relationship/Correlation between maize production and maize price (1)
- 3.3.2 The price of maize increases with the decrease of maize in maize production and vice versa (2)
- 3.3.3 R1 400 (2)
- 3.3.4 **TWO outcomes of drought (El Niño):**
Drop in production/no production due to drought
No supply of maize
Loss of income/profit (Any 2) (2)
- 3.3.5 $(30 \times 5) \times 1000$
= R15 000 (2)
- 3.3.6 R5 000 – R3 500
= R1 500 (2)

3.4 Chemical reactions in the soil

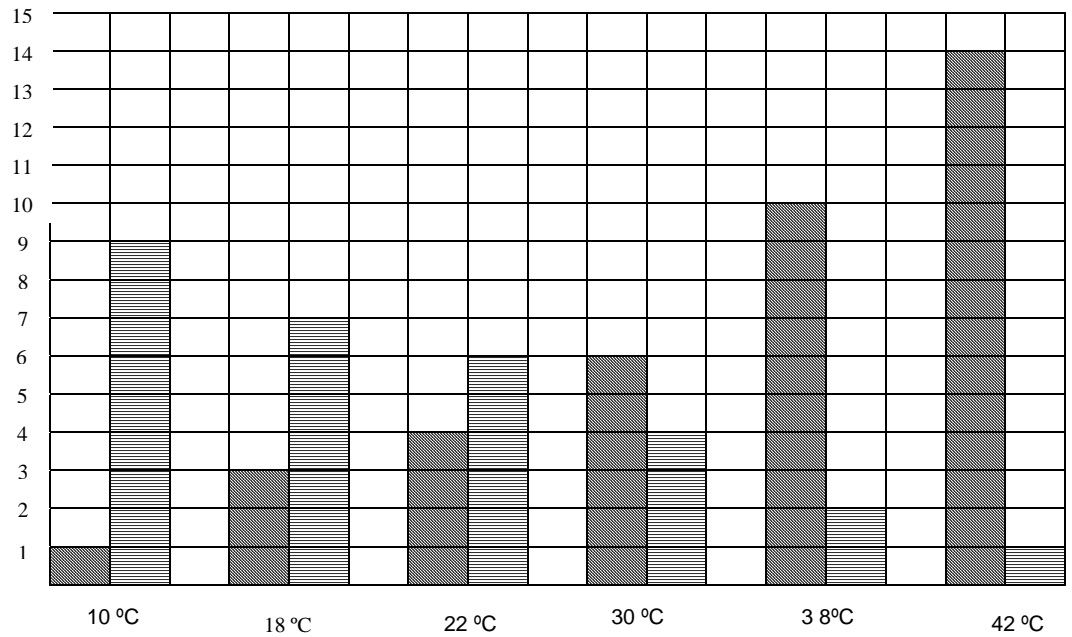
- 3.4.1 A – amino acids
B – water (H₂O)
C – nitrite (3)
- 3.4.2 Enzymes and micro-organisms work optimally in a temperature of 25 °C. Once the temperature drops below 25 °C, their activities (reactions) will also drop. (2)
- 3.4.3 Enzymes (1)
- 3.4.4 Amino group (NH₂) (1)

[35]**QUESTION 4****4.1 Alimentary canal and digestion of feed**

- 4.1.1 A – Chemical breakdown of feed
B – Absorption
C – Assimilation
D – Egestion (4)
- 4.1.2 (a) G
(b) H
(c) F (3)
- 4.1.3 **Adaptation of structure for absorption of nutrients:**
Blood capillaries – absorption of digested food
Number of villi – increase absorption surface
Microvilli increase the internal surface area (Any 2) (2)

4.2 Feeding facility for pigs

4.2.1



Temperatures (°C):

Water usage
Feed intake



(4)

CRITERIA	INDICATORS		
Correctness	Not a bar graph, incorrect values and no headings 0	Bar graph or correct headings 1	Bar graph and correct values and correct headings 2
Neatness	No neat bars and did not use a ruler for lines and no measured distances 0	Neatly drawn bars or used a ruler for lines or measured distances 1	Neatly drawn bars and used a ruler for lines and measured distances 2
TOTAL	(4)		

4.2.2

When environmental temperatures increase to above the optimal levels the farmer will use cooling (open ventilation/fans) and when the environmental temperatures decrease to below the optimal point he will use heating (close ventilation/heaters)

(2)

4.3 Digestion trial for sheep

Lucerne hay:

10% of 8kg = $\frac{10}{100} \times 8 \text{ kg} = 0,8 \text{ kg}$

8 kg – 0,8 kg = 7,2 kg

Manure:

50% of 2 kg = $\frac{50}{100} \times 2 \text{ kg} = 1 \text{ kg}$

Calculation:

$$\frac{7,2\text{kg} - 1\text{kg}}{7,2\text{kg}} \times \frac{100}{1}$$

=8,6% (3)

4.4 Labour problems in the farming industry**4.4.1 Shortage of labour:**

There is an overall scarcity of labour for the farming industry – working conditions on farm are less attractive (lower salaries)

There is a competition for labour with industries – there are better working conditions and services

Migration of labour from the rural areas to cities – phenomenon in developing countries (3)

4.4.2 Lack of training:

Productivity of labour is lower

Lower levels of skills in labour in the farming industry

Limits the use of technology in farming enterprises

Less career opportunities in agriculture (bad management) (Any 2) (2)

4.5 Methods of marketing

4.5.1 Free marketing (1)

4.5.2 Direct sales to the public from the farm

Sales are in cash

Immediate payments for products

Farmer determines his/her own price (e.g. R6,00) (Any 1) (1)

4.5.3 No go-between (intermediaries)

Entrepreneurial initiative and drive can be shown

Entrepreneur can work harder

Sales are cash

No delay in payments

Production of quality products is encouraged (Any 1) (1)

4.5.4 Very visible notice boards of product (showing the price)

Clear and visible building (farm stall)

Location next to a busy road

Use of colour and placing the products for everyone to see (Any 2) (2)

4.6 Genetics factors that affect the production of dairy cattle**4.6.1 ONE environmental factor that influences growth and production:**

Climate

Feed supply to animals

Housing facility

Availability of water

(Any 1)

(1)

4.6.2 TWO genetic factors that have an influence on milk production:

Size of udder

Size of animal

Colour of animal

(Any 2)

(2)

4.6.3 Breeding (related breeding/inbreeding/line breeding/non-related breeding/cross breeding/upgrading)

(1)

4.7 Model of chemical compound

4.7.1 Hydrogen/H

(1)

4.7.2 Glucose

(1)

4.7.3 Very soluble

(1)

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