education

Department:
Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

AGRICULTURAL SCIENCES P1

EXEMPLAR 2009

MEMORANDUM

MARKS: 150

This memorandum consists of 8 pages.

SECTION A

QUESTION 1.1

1.1.1	**A**	**B**	**X**√√	**D**
1.1.2	**A**	**B**	**C**	**X**√√
1.1.3	**X**√√	**B**	**C**	**D**
1.1.4	**A**	**B**	**X**√√	**D**
1.1.5	**A**	**B**	**X**√√	**D**
1.1.6	**X**√√	**B**	**C**	**D**
1.1.7	**A**	**B**	**X**√√	**D**
1.1.8	**A**	**B**	**C**	**X**√√
1.1.9	**A**	**B**	**C**	**X**√√
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	**B**√√

(5 x 2) (10)

QUESTION 1.3

1.3.1 Crop√√

1.3.2 Potential / Gross / Combustion√√

1.3.3 Feedlot√√

1.3.4 "Freemartin"/"Queen" √√

1.3.5 Cryptorchidism√√

(5 x 2) (10)

QUESTION 1.4

1.4.1 Lipase √

1.4.2 Reticulum√

1.4.3 Legume pasture / Roughage√

1.4.4 Seminiferous tubules / Testis√

1.4.5 Sertoli√

(5 x1) (5)

TOTAL SECTION A: 45

SECTION B

QUESTION 2

2.1 Teeth of the ruminant animal

2.1.1 Lower jaw ✓ (1)

2.1.2 D / E ✓
All permanent teeth and wearing (erosion) of the permanent teeth ✓ (2)

2.1.3 Cut off the grass during the intake of feed/grazing ✓
Breaking food particles into smaller pieces/chewing ✓
Re-chewing the cud during regurgitation ✓
Softening food particles (crushing them) ✓ (Any 3) (3)

2.1.4 A ✓ (1)
The incisors are not yet permanent ✓
Young animal whose rumen is not yet developed ✓ (Any 1) (1)

2.2 Alimentary canal of a farm animal

2.2.1 Fowl / Chicken / Non-ruminant ✓ (1)

2.2.2 B – oesophagus ✓
D – crop ✓
F – proventriculus / glandular stomach ✓
H – ventriculus / muscular ✓
N – cloaca /vent ✓ (5)

2.2.3 Common opening for both digestive ✓
and urogenital systems ✓ (2)

2.2.4 Bile ✓ (1)

2.2.5 (a) H ✓ (1)
(b) D ✓ (1)
(c) J ✓ (1)

2.3 Nutrient element deficiency

2.3.1 Phosphorus (P) ✓ (1)
2.3.2 Iodine (I) ✓ (1)
2.3.3 Iron (Fe) ✓ (1)
2.3.4 Copper (Cu) ✓ (1)
2.3.5 Zinc (Zn) ✓ (1)

2.4 **Calculation of digestibility**

Moisture content = 10% of 5 kg
= 0,5 kg ✓
Dry weight of hay = 5 kg – 0,5 kg
= 4,5 kg ✓

$$\frac{\text{Dry material intake (kg) – Dry mass of manure}}{\text{Dry material intake (kg)}} \times \frac{100\ ✓}{1}$$

$$= \frac{4,5\text{ kg} – 2\text{ kg}}{4,5\text{ kg}} \quad \frac{100\ ✓}{1}$$

= 55,5% ✓ (5)

2.5 **The relationship between the different measures of energy**

A – loss of energy ✓
B – loss of energy in the manure ✓
C – loss of energy through the urine ✓
D – metabolic energy ✓
E – loss of energy through heat losses ✓ (5)
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QUESTION 3

3.1 **Sources of protein used in feeding rations of farm animals**

3.1.1 Animal protein ✓
Plant protein ✓ (2)

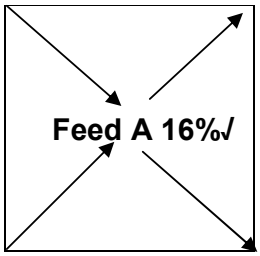
3.1.2 Amino-acids ✓ (1)

3.1.3 Fish meal ✓ (1)
Animal proteins are more expensive ✓
They are more in demand ✓
They are more scarce ✓
The processing of feed is costly/machines are involved in processing ✓ (Any 1) (1)

3.2 Schematic representation of three rations

3.2.1 (a) Feed A ✓
Good balance between protein, carbohydrates and lipids for working horses ✓ (2)
(b) Feed B ✓
Most protein for growth / most lipids for energy ✓ (2)
(c) Feed A ✓
Lots of carbohydrates and less protein needed for old ewes ✓ (2)

3.2.2 Maize meal 9% **24 parts** of Maize meal ✓



Soya bean meal 40% ✓ **5 parts** of Soya bean meal ✓ (4)

3.2.3 Maize meal ✓ (1)
Most common carbohydrate concentrate used in animal feeding ✓
Contains lots of starch ✓
Contains lots of digestible carbohydrates ✓
It has high TDN ✓ (Any 1) (1)

3.3 Lactation curve

3.3.1 Drop in milk production at about 18 weeks ✓
Diseased cow will experience such a drop in production ✓ (2)

3.3.2 Milk production recovered to its normal position ✓ (1)

3.3.3 Production dropped between 18 to 24 weeks ✓
Loss of income because of lower milk production in this period ✓ (2)

3.4 **Table of animal production**

3.4.1 The lowest temperature an animal can endure before major portions of the feed is utilised to maintain production (2)

3.4.2 Piglets ✓
High lower critical temperature ✓
High optimum temperature required ✓
Lowest heat produced ✓ (Any 3)
OR
Chickens (day old) ✓
High lower critical temperature ✓
High optimum temperature required ✓
Lowest heat produced ✓ (Any 3) (3)

3.4.3 (a) piglets ✓ (1)
(b) dairy cows ✓ (1)
(c) dairy cows ✓ (1)

3.5 **Heat movement in an animal enclosure**

3.5.1 Convection ✓
Radiation ✓
Conduction ✓ (3)

3.5.2 Radiation controlled though the walls of the building ✓
Hot air released through the roof of the building ✓ (2)
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QUESTION 4

4.1 **Diagram depicting reproductive process of the cow**

4.1.1 Mounting ✓ (1)

4.1.2 Oestrus ✓ (1)

4.1.3 21 days ✓ (1)

4.1.4 FSH ✓ (1)

4.1.5 Ovulation ✓ (1)

4.1.6 If observed in the morning ✓, then you inseminate in the afternoon, ✓ if observed in the afternoon ✓, then you inseminate in the morning ✓ (2)
(Any 2)

4.2 **Drying up and resting of cows**

4.2.1 The ideal resting period is two months ✓ (1)

4.2.2 It allows a cow to restore her body reserves ✓
which have been broken down during lactation period ✓ (2)

4.2.3 The beneficial effect on the unborn calf (foetus) is its development✓ (1)

4.2.4 The cow should not become too fat. ✓ (1)

4.2.5 Because the cow has to restore her body reserves ✓ (1)

4.3 **Identification of the veterinary instruments**

4.3.1 A=Burdizzo ✓
B=Elastrator ✓
C=Emasculator ✓ (3)

4.3.2 They are used for castration ✓
cutting of the thin ducts that carry the sperms from testes to the penis ✓ (Any 1) (1)

4.3.3 No swelling of the testicles during healing ✓
No bleeding ✓
No pain is felt during the process ✓ (Any 2) (2)

4.3.4 Place instruments in boiling water before use ✓
Use a disinfectant like an ammonium solution to sterilise them ✓ (2)

4.4 **Basic veterinary equipment and the health of the farm animal**

4.4.1 The farm animal is sick✓ (1)

Two signs of the sick animal:

The animal is very lean/emaciated/bony✓

Seems to walk with difficulty/limping✓

Facial expression showing partially closed eyes and back-bending ears are signs of a sick animal. ✓ (Any 2) (2)

4.4.2 (a) E✓ (1)

(b) B✓ (1)

(c) D✓ (1)

(d) C✓ (1)

4.5 **The viral disease that affects farm animals**

4.5.1 Rabies ✓ (1)

4.5.2 The sick animal salivates ✓
The sick animal appears to be mad ✓ / runs around ✓ / restless ✓ (2)

4.5.3 Sick animals are injected with the correct antibiotic / germicide ✓
Prevent it by inoculating/vaccinating the healthy animals ✓
Keep sick animals under quarantine conditions ✓ (Any 2) (2)

4.5.4 Rabid animals (dogs) may bite human beings who may also become sick / the disease is infectious ✓
Meat of infected animals may be consumed by man who may also be affected by the disease ✓ (Any 2) (2)
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TOTAL SECTION B: 105

GRAND TOTAL: 150