education

Department:
Education
REPUBLIC OF SOUTH AFRICA

NATIONAL
SENIOR CERTIFICATE

GRADE 12

AGRICULTURAL SCIENCES P1

FEBRUARY/MARCH 2010

MEMORANDUM

MARKS: 150

This memorandum consists of 10 pages.

SECTION A

QUESTION 1.1

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

(10 x 2) (20)

QUESTION 1.2

	A	**B**	**A and B**	**NONE**
1.2.1				**X**√√
1.2.2		**X**√√		
1.2.3	**X**√√			
1.2.4	**X**√√			
1.2.5			**X**√√	

(5 x 2) (10)

QUESTION 1.3

1.3.1   Abomasum √√

1.3.2   Culling √√

1.3.3   Biological farming/organic production√√

1.3.4   Corpus Luteum/yellow body √√

1.3.5   Pulse rate √√   (5 x 2) (10)

QUESTION 1.4

1.4.1   biological √

1.4.2   duodenum √

1.4.3   digestibility √

1.4.4   lobola √

1.4.5   vector√

(5 x 1) (5)

TOTAL SECTION A: 45

SECTION B

QUESTION 2

2.1   **Nutritional information of selected animal feeds**

      2.1.1   Blood meal ✓
               Fish meal ✓   (2)

      2.1.2   No chewing of the cuds/no regurgitation ✓
               No rumen or large opening in stomach that could serve as a
               fermentation vessel ✓
               No symbiotic rumen microbes to digest cellulose ✓   (Any 2)   (2)

      2.1.3   Blood meal/Fish meal ✓
               Concentrates have low crude-fibre content/highly digestible/no plant
               matter (cellulose) ✓   (2)

      2.1.4   The sorghum grains are a source of energy ✓
               because they are rich in carbohydrates like starch ✓   (2)

      2.1.5   Blood meal ✓
               Because it has the highest crude protein of 82,2% ✓   (2)
                                                              [10]

2.2   **Graph of feed cost, weight gain and profit of broiler production unit**

      2.2.1   Feed ✓   (1)

      2.2.2   (a) D or E ✓
               (b) D ✓
               (c) E ✓   (3)

      2.2.3   Low/poor profit ✓
               Low/poor growth rate ✓
               Low/poor energy value ✓   (Any   (2)
               2)
                                                               [6]

2.3   **Observations of the feeds and calculations thereof**

2.3.1   Calculation of the digestibility of the fodder
Moisture content of the feed   = 12% of 24 kg
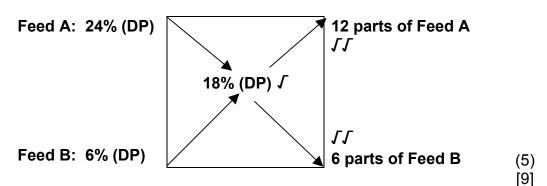   = 2,88 kg
Moisture content of the faeces = 25% of 10 kg
                                                = 2,5 kg

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

$$= \frac{(24 - 2,88) - (10 - 2,5)\text{kg} \checkmark}{24 - 2,88} \times \frac{100}{1}$$

$$= \frac{13,62 \times 100}{21,12} \checkmark$$

$$= 64,5\% \checkmark$$

(4)

2.3.2   **Calculation of the ratio using the Pearson square:**

Feed A: 24% (DP)   **12 parts of Feed A**
                                                            $\checkmark\checkmark$

                          18% (DP) $\checkmark$

                                                            $\checkmark\checkmark$
Feed B: 6% (DP)   **6 parts of Feed B**   (5)
                                                                                                    [9]

2.4   **Case study on the nutritional requirements of horses**

2.4.1   **Roughages** are bulky feeds $\checkmark$
That contain less/little digestible nutrients $\checkmark$
Have a high crude-fibre content $\checkmark$
Large volume compared to mass $\checkmark$ (Any
2)   (2)

Concentrates are not bulky feeds $\checkmark$
Contain more digestible nutrients $\checkmark$
Have low fibre content $\checkmark$
Low volume per mass unit $\checkmark$ (Any 2)   (2)

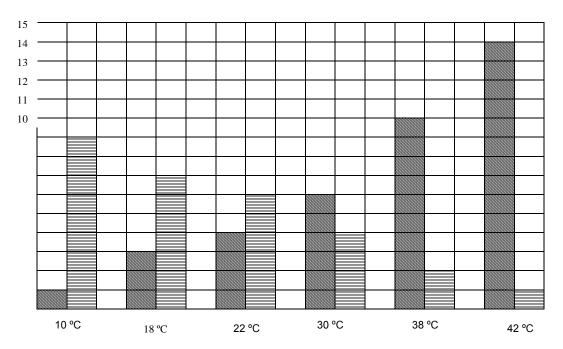2.4.2   Bacteria/micro-organisms/microbes are present $\checkmark$
Large   caecum   present/fermentation   vessel $\checkmark$ (1)
(Any 1)

2.4.3   Because their stomachs are not well/not fully developed before 6 months ✓   (1)

2.4.4   Horses prepared for endurance rides (hard work) need more energy from ⅔ concentrates ✓
as compared to ⅓ concentrates needed by the non-working horses✓   (2)

Horses not working need ⅔ roughages for maintenance ✓
as opposed to ⅓ roughages needed by the horses prepared for endurance (hard work) ✓   (2)
[10]
[35]

QUESTION 3

3.1   **Equipment used in animal production**

3.1.1   **Identification of the equipments**
A = Feeders ✓
B = Double-neck yoke ✓   (2)

3.1.2   **Functions of the equipment**
Feeders (A) – used to give bought/mixed feeds to chickens ✓
Yoke (B) – used for harnessing draught animals ✓   (2)
[4]

3.2   **The influence of environmental factors on animal production**

3.2.1   Light ✓
Moisture/humidity ✓
Ventilation/aeration ✓
Altitude ✓
Topography/terrain ✓
Physical facilities (buildings) ✓
Aspect ✓   (Any 2)   (2)

3.2.2   High loss of body energy due to high metabolic processes occurring, resulting in lower production ✓
High temperature will result in lower production, because food reserves will be used to regulate body temperature ✓   (2)

3.2.3

Temperatures (ºC)

Water usage:
Feed intake:

CRITERIA	INDICATORS		
Correct values	Incorrect values and no indicators **0**	Mostly correct values or indicators correct **1**	All values correct and all indicators correct **2**
Correct graph	Not a bar graph and no heading **0**	Bar graph or correct headings **1**	Bar graph 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	**(6)**		

(6)
[10]

3.3　**Case study: Mr Dlamini**

3.3.1　Resistance to extreme heat in summer ✓
Some animals (e.g. sheep) graze at lower levels/the type of vegetation ✓
The type of breed/the demand of wool or mutton production ✓
Parasites and other diseases common to the area ✓　　(Any 2)　(2)

     3.3.2   Intensive production system/feedlot ✓   (1)

     3.3.3   More animals that will be kept per unit area/larger outputs ✓
                More intensive system of farming ✓
                More control over feeding/optimal feeding ✓   (Any 1)   (1)

     3.3.4   Use scientific/modern methods of breeding/AI/Cloning/Embryo transfer ✓
                Use an adaptable superior bull for upgrading the herd ✓   (Any 2)   (2)
                                                                                 [6]

3.4   Case study : Zulu people

     3.4.1   Land/Soil ✓
                Grazing ✓
                Water ✓
                Cattle/animals ✓   (Any 3)   (3)

     3.4.2   Natural breeding ✓
                Through bride exchanges and ✓
                inheritance   ✓   (2)
                (Any 2)

     3.4.3   Effectiveness: Traditional medicine takes longer or is less effective ✓
                Availability: Traditional medicine is more available for the rural farmer ✓
                Environmental impact: Traditional medicine is less toxic and more environmentally friendly ✓
                Costs: Traditional medicine is less expensive ✓   (Any 2)   (2)

     3.4.4   Women are forbidden to herd and enter the kraal ✓
                Women in the state of ritual impurity, may contaminate the whole herd ✓   (2)

     3.4.5   The leaf sap of inhlaba (*Aloe ferox*) ✓   (1)
                                                                                    [10]

3.5   Synchronisation of dairy cows

     3.5.1   May ✓
                June ✓   (2)

     3.5.2   Calving ✓   (1)

3.5.3   Cows will be drier for longer period/less milk is produced/profit loss √
Dry cows need to be fed without producing an income/ maintenance costs √ (2)

[5]

[35]

QUESTION 4

4.1   **State of reproduction of a cow**

4.1.1   Pregnancy testing/Artificial insemination/Removal of retained placenta √ (1)

4.1.2   (a) Cervix/large intestine/developing foetus/ovary √ (1)
(b) Pistoulette (pipette)/vulva/vagina √ (1)

[3]

4.2   **Fertilisation and embryo development**

4.2.1   (a) D √
(b) B √
(c) A √
(d) A √ (4)

4.2.2   Follicle development √
Ovulation √
Fertilisation √ (3)

4.2.3   Met-oestrus / pro-oestrus / di-oestrus √ (Any 1) (1)

4.2.4   The farmer switches to AI and don't keep male animals for breeding purposes anymore √
A farmer wants to have twins and treats his female animals to superovulate √
The farmer wants to increase the genetic material of a superior female animal by using embryo transplantation √
The farmer wants to use artificial methods to increase production √ (Any 2) (2)

4.2.5   Nutrients in the animal body are displaced to the milk (production) √
Milk production is the priority in the animal body √ (2)

[12]

4.3   **Life cycle of an internal parasite**

   4.3.1   Liver fluke/*Faciola hepatica*/*F. gigantica* √   (1)

   4.3.2   Using medication/drenching/dosing/injections (Ivomac)/lick block with worm remedies √
   Taking sheep away from field which is wet/removing water √
   around the drinking crypt of animals/rotational grazing/avoid wet places or marches √
   Using indigenous medication like a bark extract from specific trees √
   Extermination of water snails with copper sulphate √   (Any 2)   (2)

   4.3.3   Parasites are not seen with the naked eye or they are internal √
   Only their effect is seen in lower production/weak condition of animal √
   OR
   They do not leave visible scars √
   But lower the production of the animal √   (Any 2)   (2)
   [5]

4.4   **Common diseases and parasites associated with farm animals**

   4.4.1   Foot and mouth disease √   (1)

   4.4.2   Brucellosis √   (1)

   4.4.3   Tick fever/Red water √   (1)

   4.4.4   Ringworm √   (1)

   4.4.5   Redwater √   (1)

   4.4.6   Bluetongue √   (1)
   [6]

4.5   **Graph of colostrum**

   4.5.1   Just after birth/first days after calving √   (1)

   4.5.2   Antibodies protect the animal √
   Against diseases/disease organisms √   (2)

   4.5.3   The young animal receive antibodies in the colostrum √
   Shortly after birth for the first 2 weeks √   (2)

4.5.4   Vaccination √   (1)
                                                                                                         [6]

4.6   **Control of parasites and diseases**

Effective programme to prevent diseases/sanitation/vaccination √
Effective identification of the disease/symptoms of diseases √
Effective control of the disease/treatment of disease √
Using knowledge and experience of professionals/veterinarian √
                                                                    (Any 3)   (3)
                                                                                         [35]

                                                        TOTAL SECTION B: **105**

                                                        GRAND TOTAL: **150**