



# education

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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

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

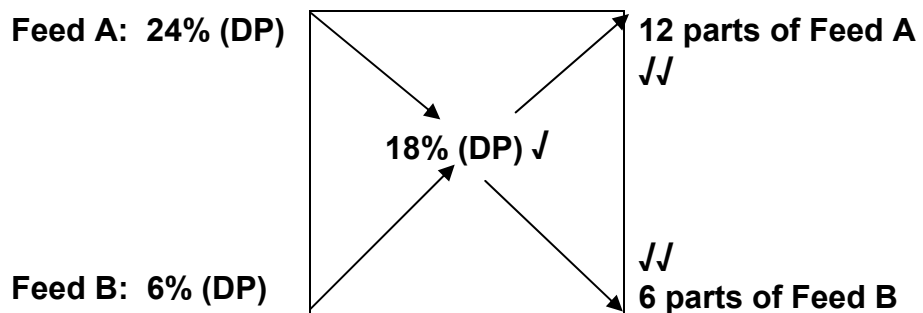
$$= \frac{(24 - 2,88) - (10 - 2,5)\text{kg} \checkmark}{24 - 2,88} \times \frac{100}{1}$$

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

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

(4)

- 2.3.2 Calculation of the ratio using the Pearson square:

(5)  
[9]

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

- 2.4.1 **Roughages** are bulky feeds ✓  
 That contain less/little digestible nutrients ✓  
 Have a high crude-fibre content ✓  
 Large volume compared to mass ✓ (Any 2) (2)
- Concentrates** are not bulky feeds ✓  
 Contain more digestible nutrients ✓  
 Have low fibre content ✓  
 Low volume per mass unit ✓ (Any 2) (2)
- 2.4.2 Bacteria/micro-organisms/microbes are present ✓  
 Large caecum present/fermentation vessel ✓ (Any 1) (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  $\frac{2}{3}$  concentrates ✓ as compared to  $\frac{1}{3}$  concentrates needed by the non-working horses ✓ (2)
- Horses not working need  $\frac{2}{3}$  roughages for maintenance ✓ as opposed to  $\frac{1}{3}$  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) ✓

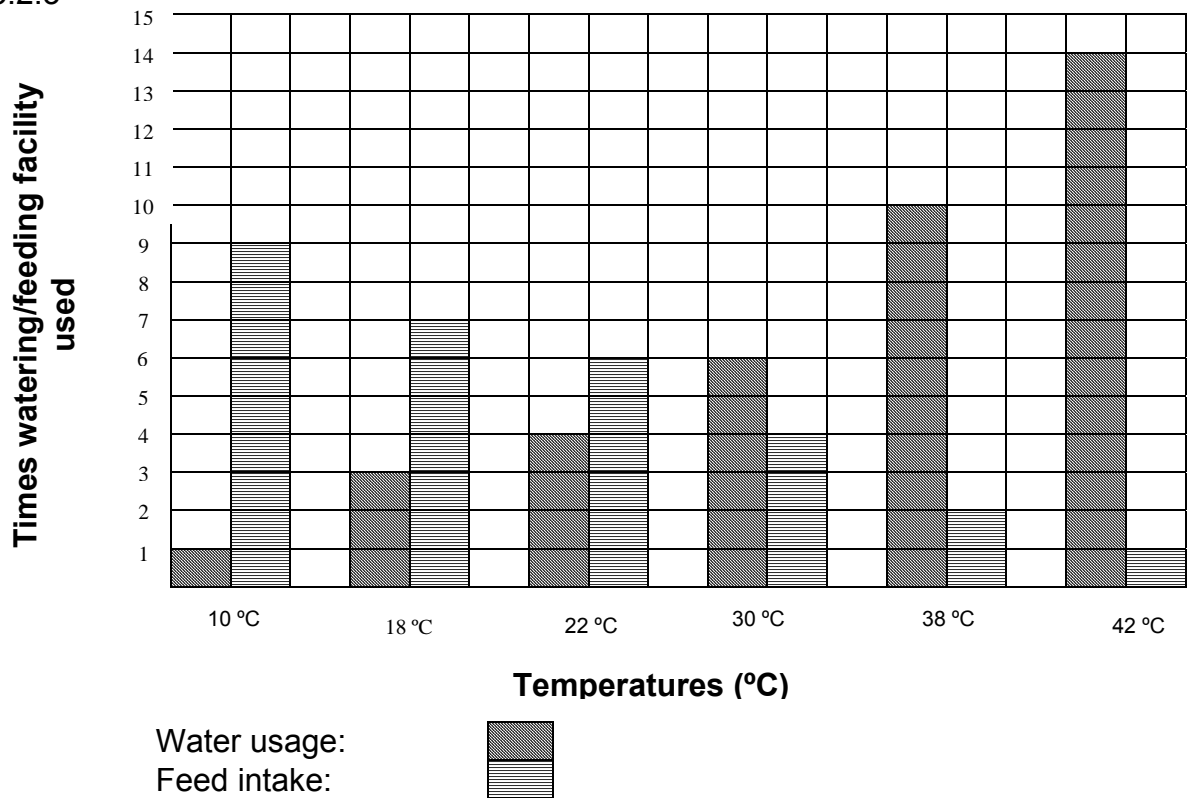
Aspect ✓

(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



CRITERIA	INDICATORS		
<b>Correct values</b>	Incorrect values and no indicators <b>0</b>	Mostly correct values or indicators correct <b>1</b>	All values correct and all indicators correct <b>2</b>
<b>Correct graph</b>	Not a bar graph and no heading <b>0</b>	Bar graph or correct headings <b>1</b>	Bar graph and correct headings <b>2</b>
<b>Neatness</b>	No neat bars and did not use a ruler for lines and no measured distances <b>0</b>	Neatly drawn bars or used a ruler for lines or measured distances <b>1</b>	Neatly drawn bars and used a ruler for lines and measured distances <b>2</b>
<b>TOTAL</b>	<b>(6)</b>		

(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 ✓ (Any 2) (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 (Ivomec)/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**