basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

AGRICULTURAL SCIENCES P1

FEBRUARY/MARCH 2013

MEMORANDUM

MARKS: 150

This memorandum consists of 10 pages.

SECTION A

QUESTION 1.1

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

(10 x 2) (20)

QUESTION 1.2

1.2.1	**A**	✓✓	**C**	**D**
1.2.2	✓✓	**B**	**C**	**D**
1.2.3	✓✓	**B**	**C**	**D**
1.2.4	**A**	**B**	**C**	✓✓
1.2.5	**A**	**B**	✓✓	**D**

(5 x 2) (10)

QUESTION 1.3

1.3.1	Pancreas✓✓
1.3.2	Anaemia✓✓
1.3.3	Species crossing✓✓
1.3.4	Antibiotics✓✓
1.3.5	Lack of libido/lack of sex urge/impotence✓✓

(5 x 2) (10)

QUESTION 1.4

1.4.1	Oesophageal groove✓✓
1.4.2	High✓✓
1.4.3	Weaning✓✓
1.4.4	Production ration✓✓
1.4.5	Plunge dip✓✓

(5 x 1) (5)

TOTAL SECTION A: 45

SECTION B

QUESTION 2: ANIMAL NUTRITION

2.1 Digestive system of non ruminants

2.1.1 A – Liver✓
B – Jejunum✓
C – Colon✓
D – Stomach✓
E – Pancreas✓ (5)

2.1.2 Small intestines/duodenum✓ (1)

2.1.3 **The main structural difference of the small intestine**

	Ruminant	Non-ruminant
Length of small intestine	The length of the small intestine is longer✓	The length of the small intestine is shorter✓ **or**
Absorption area	larger absorption area✓	smaller absorption area✓

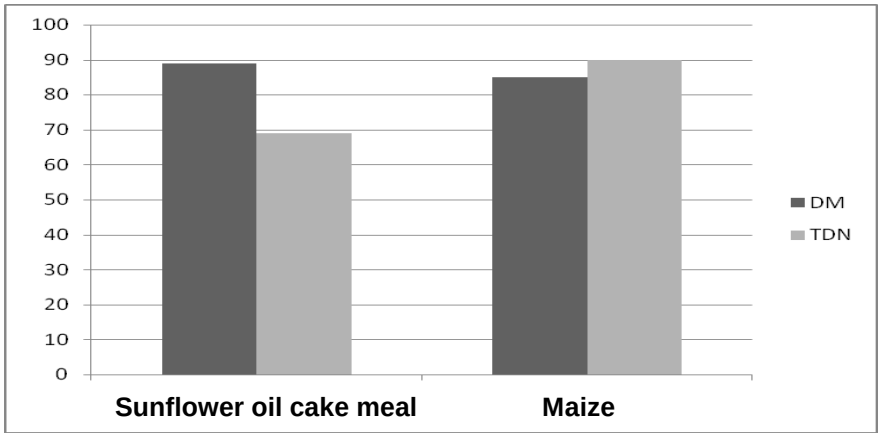
(2)

2.1.4 **Functions of bile**

- Emulsifies fats✓
- Changes the pH from acid to alkaline/neutralises acid from stomach✓
- Acts as an antiseptic/kills germs✓
- Promotes the absorption of fatty acids and glycerol✓
- Assists with the absorption of fat soluble vitamins✓ (Any 3) (3)

2.2 Feeding programme

2.2.1 **Comparison of the TDN and DM values for sunflower oil cake meal and maize**



Marking the graph with the following checklist

Criteria	Yes: 1 Mark	No: 0 Mark
1. Bar graph		
2. X axis labelled		
3. Y values indicated		
4. Values are plotted correctly		
5. Correct heading		
6. Units are indicated on Y axis		

(6)

2.2.2 **Sunflower oilcake meal:**

NR = 1 : $\frac{69\% - 31\%}{31\%}$ ✓

1 : 1,2 **or** 1:1 ✓

Maize:

NR = 1 : $\frac{90\% - 10\%}{10\%}$ ✓

1 : 8 ✓ (4)

2.2.3 Sunflower oilcake meal ✓

AND

- Has a narrow NR ratio ✓
- NR is less than 1:6 which is the norm for a narrow margin ✓

OR

- Has more protein/high % of protein/high protein content ✓
- In relation to carbohydrates and fats ✓

(3)

2.3 **Animal feeds**

2.3.1 **Classification of feeds**

(a) Silage
(b) Soya bean oil cake meal (2)

2.3.2 **Suitability of a balanced ration**

- Ration has all the nutrients (concentrates and roughages) needed by the animal/balanced ration/supplements like minerals and vitamins are present ✓
- All the requirements for the ration is supplied at once ✓
- Micro organisms in the stomach get a uniform and balanced addition of nutrients during the ingestion process ✓
- Save on labour as separate feedings are not needed ✓
- Animals get a balanced ration which makes them to grow faster/more healthier ✓ (Any 2) (2)

2.3.3 **Factors that determine water intake**

- Composition of feed/ration✓
- Production status (milk production) ✓
- Temperature(climatic factors)/wind/humidity ✓
- Types/breeds of animals ✓
- Size of the animals ✓
- Location of feedlot (more radiation from the sun or less radiation from the sun) ✓
- Size of the feedlot-movement area of animals ✓ (Any 3) (3)

2.3.4 **Importance of vitamins**

(a) Vitamin A

- Necessary for healthy bones✓
- Provides resistance to bacterial infections✓
- Necessary for normal reproduction✓
- Maintains healthy epithelial tissue and mucous membranes✓
- Ensures good vision✓ (Any 2)

(b) Vitamin D

- Helps with the absorption of calcium and phosphorus✓
- Ensures healthy teeth and bones✓
- Ensures good growth✓ (Any 2) (4)

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QUESTION 3: ANIMAL PRODUCTION

3.1 Animal productivity

3.1.1 **TWO adverse environmental conditions**

- Excessively hot conditions✓
- Excessively cold conditions✓ (2)

3.1.2 **Factors that influence the animal's ability for production potential**

- Nutrition✓
- Diseases/Parasites✓
- Genetic make-up**/**Breeding✓
- Environment/Temperature✓
- Management✓
- Shelter✓ (Any 3) (3)

3.1.3 **The economic impact of adverse conditions for the livestock farmer**

- Extra feeding to livestock/output not proportional to input✓
- More money spent on inputs which makes the profit to be less✓

or

- Loss of production✓
- Smaller income for the farmer and profit is less✓ (2)

3.1.4 **TWO measures to address the adverse environmental conditions**

- The farmer can provide housing/shelter to protect the animals✓
- Provide more feed✓
- Utilise environmental control measures like heaters/sprayers/ misters✓ (Any 2) (2)

3.1.5 (a) **TWO reasons for the observation on very hot days**

- Very hot day animals felt very uncomfortable / less energetic✓
- Had to breath faster✓
- Had a loss in appetite / ingested less food✓
- Temperatures are above the optimum for production✓ (Any 2) (2)

3.1.5 (b) **TWO reasons for the observation on very cold days**

- On cold days more heat was lost from the animal body✓
- And more digested feed had to be burnt to compensate for the loss of heat✓
- Which was also lost for production/nutrients was not utilized for production✓
- Temperatures are below the optimum for production✓ (Any 2) (2)

3.2 **Animal behaviour**

3.2.1 **THREE reasons for handling sheep**

- For shearing✓
- For catching/ transporting/loading✓
- For foot toning/soaking/conditioning✓
- For dipping✓
- For deworming✓
- For ear tagging✓ (Any 3) (3)

3.2.2 **TWO basic design features of the sheep handling facility**

- Not as strong material compared to that of cattle✓
- Mobile/not permanent/temporary/can be moved✓
- Not very high sides/fences/gates✓
- Solid sides to make handlers less visible/easier movement✓
- Chute included to prevent movement of animals✓
- Cutting/sorting gate visible to group animals✓ (Any 2) (2)

3.2.3 **Handling animals with newly born**

- Avoid getting between an animal with its young✓
- Carry out all treatment on new born in an area isolated from the mother✓
- Let the newly born stay as close as possible to the parent ✓
- Always be aware of the position of the parent ✓ (Any 2) (2)

3.2.4 **Sheep has a higher risk of stock theft**

- Sheep normally flock together which makes them easier to find✓
- Flocking makes sheep easier to catch✓
- Sheep are smaller animals and one handler can carry/tie a sheep✓
- It is easy to move them into a corner and use your arms or a portable gate to form a visual barrier ✓
- When the head of the sheep is covered it will lie still✓ (Any 2) (2)

3.3 **Handling large animals**

3.3.1 A – Rope✓
B – Nose holder✓ (2)

3.3.2 Handled to make it to lie down/bring the animal down✓ (1)

3.3.3
- nostril ✓
- ear ✓ (Any 1) (1)

3.4 **Milk production**

3.4.1 Lactation curve✓ (1)

3.4.2 (a) 44 weeks✓ (1)
(b) 0 weeks/8 weeks after she was dried up✓ (1)
(c) 4 weeks✓ (1)
(d) 4 weeks✓ (1)
(e) 16 weeks✓ (1)

3.4.3 **Factors determining peak period**

- Type of breed✓
- Age of the animal✓
- Nutrition✓
- Health condition✓
- Type of system/Housing/shelter/environmental control✓
- Environmental conditions✓ (Any 3) (3)

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QUESTION 4: ANIMAL REPRODUCTION, PROTECTION AND CONTROL

4.1 **Structure of fallopian tube and uterus**

4.1.1 1. Ovulation✓
2. Fertilisation✓
3. Mitosis/cell division✓ (3)

4.1.2 **Function of amniotic fluid**

- Protects the embryo from shocks✓
- Suspends the embryo✓
- Prevent the embryo from drying out✓
- Make calving easier/lubricates the birth canal during calving✓ (Any 2) (2)

4.1.3 **Function of structure B**

- Passage for oxygen and nutrients✓
- from the maternal blood✓

or

- Passage for waste products✓
- from the embryo✓ (2)

4.1.4 Luteinising hormone(LH)✓ (1)

4.1.5 **Adaptation of part F**

- Contains an acrosome with the enzyme✓
- Enzyme can dissolve the embryo wall✓
- Facilitates egg cell penetration as it moves forward/head part✓

(Any 2) (2)

4.2 **Artificial insemination**

4.2.1 **Characteristics of good semen**

- opaque✓
- milky/Normal colour ✓
- sticky✓
- less than 15% dead sperm cells✓
- no deformed sperm✓
- no blood in sperm✓ (Any 4) (4)

4.2.2 **The treatment of the frozen semen**

- Frozen semen is thawed/straws placed in water✓
- At between 32°C and 35°C✓ (2)

4.2.3 **Best time of inseminating**

- 12 hours after the first signs of oestrus✓
- in the morning when signs of oestrus were detected in the afternoon and vice versa✓ (Any 1) (1)

4.2.4 **The negative effect on the cow if the inseminator is not well trained**

- The inseminated cow might sustain injuries✓
- And the reproductive life of the cow shortened✓
- Pain and stress could be experienced✓ (Any 2) (2)

4.3 Male reproductive system

4.3.1 Identification of labelled parts of the male reproductive system

A - Vesicular gland/seminal vesicles✓
B - Penis✓
D - Testicles/testes✓ (3)

4.3.2 Function of part labelled A

Secretes a sticky yellowish fluid/seminal fluid✓ (1)

4.3.3 Function of hormone secreted in part labelled D

- Responsible for male characteristics✓
- Stimulates the process of sperm formation/spermatogenesis✓ (1)

4.3.4 Reason for suspension of part labelled D

- To regulate the temperature of the sperm cells/sperm formation /spermatogenesis ✓
- which requires a temperature slightly lower than the body temperature✓
- More airflow is possible over the structure that will cool it down during warm weather conditions✓ (Any 2) (2)

4.4 Life cycle of roundworms

4.4.1 Symptoms of roundworm infestations

- Mouth and eyes are pale✓
- Watery swelling may develop beneath the jaw✓
- Animals are weak and breathe quickly if they run✓
- The condition/production of the animal is weak/low ✓
- Larvae visible in manure/grass blades of pastures ✓ (Any 2) (2)

4.4.2 Methods to control roundworms at different stages

- Rest an area of veld✓ so that worm larvae and eggs die/rotation✓
- Burn the veld✓ to kill larvae and eggs✓
- Clean the kraal✓regular removal of manure✓
- Dose the animal✓ to control worms in the animal body✓ (Any 2) (4)

4.4.3 **Importance of using registered remedies**

- They are specific and only controls specific parasites✓
- Chemicals have been tested in experimental trials to ensure the safety of animals✓
- Use the correct dosage to ensure that parasites do not become resistant✓
- Registered remedies are effective and have been tested✓
- Registered remedies will not affect the animal product if used correctly✓
- Overdosing may lead to a wastage of the chemical which is expensive✓

(Any 3) (3)
[35]

TOTAL SECTION B: 105
GRAND TOTAL: 150