basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

AGRICULTURAL SCIENCES P1

EXEMPLAR 2014

MEMORANDUM

MARKS: 150

This memorandum consists of 8 pages.

SECTION A

QUESTION 1

1.1	1.1.1	D ✓✓		
	1.1.2	B ✓✓		
	1.1.3	B ✓✓		
	1.1.4	D ✓✓		
	1.1.5	C ✓✓		
	1.1.6	C ✓✓		
	1.1.7	D ✓✓		
	1.1.8	C ✓✓		
	1.1.9	A ✓✓		
	1.1.10	B ✓✓	(10 x 2)	(20)
1.2	1.2.1	A ✓✓		
	1.2.2	Both A and B ✓✓		
	1.2.3	B ✓✓		
	1.2.4	None ✓✓		
	1.2.5	A ✓✓	(5 x 2)	(10)
1.3	1.3.1	Roughage ✓✓		
	1.3.2	Broiler production unit ✓✓		
	1.3.3	Virus ✓✓		
	1.3.4	Mummification ✓✓		
	1.3.5	Hypoplasia ✓✓	(5 x 2)	(10)
1.4	1.4.1	Papillae ✓		
	1.4.2	Clotting ✓		
	1.4.3	Protein ✓		
	1.4.4	Stethoscope ✓		
	1.4.5	Vas deferens ✓	(5 x 1)	(5)
			TOTAL SECTION A:	**45**

SECTION B

QUESTION 2: ANIMAL NUTRITION

2.1 Diagram of a ruminant

2.1.1
B – rumen✓
C – reticulum ✓
D – omasum✓
E – abomasum✓ (4)

2.1.2
(a) E ✓ (1)
(b) D ✓ (1)
(c) B/C ✓ (1)
(d) G ✓ (1)

2.1.3
(a) 5 ✓ (1)
(b) 4 ✓ (1)
(c) 2✓ (1)

2.1.4
• It has a stomach with four compartments✓
• It is a goat which is classified as a ruminant ✓ (Any 1) (1)

2.2 Mineral linked to the deficiency disease

2.2.1 Calcium✓ (1)

2.2.2 Copper✓ (1)

2.2.3 Zinc✓ (1)

2.3 Classification of feeds

2.3.1 Silage✓ (1)

2.3.2 Yellow maize meal✓ (1)

2.3.3 Peanut oilcake meal✓ (1)

2.3.4 Lucerne✓ (1)

2.3.5 Oats straw✓ (1)

2.4 **Feeds marked A to D**

2.4.1 Feed D✓
Reason: Highest crude fibre content/lowest TDN value✓ (2)

2.4.2 FEED D: 24% of 30 kg =7,2 kg
DM of FEED D is 4,8 kg dry material✓
Manure: 45% of 8 kg = 3,6 kg
8 – 3,6 = 4,4 kg✓

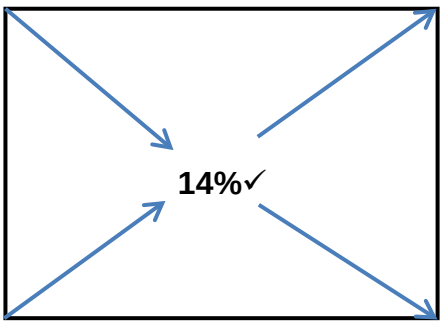
Digestible coefficient = $\frac{\text{DM intake (kg) – DM of manure (kg) } \mathbf{x} \text{ 100}}{\text{DM intake (kg)}}$✓

OR

= $\frac{\text{7,2 kg – 4,4 kg x 100/1}}{\text{7,2 kg}}$✓
= 38,9✓%✓ (5)

2.4.3 Nutritive ratio (Feed C)
= 1 : digestible non-protein substances/digestible protein✓
= 1 : (TDN – DP)/DP
= 1 : (76-13)/13✓
= 1 : 4,85✓
Suitable for the lick as the ratio is smaller than 1 : 6✓ (4)

2.4.4 Feed A: 28% 5 parts



Feed B: 9% 14 parts

5✓ : 14 ✓
OR
Mix 5 parts of Feed A ✓with 14 parts of Feed B✓ (3)

2.4.5 Increase the nitrogen content of the feed/non-protein nitrogen/ make the mixture cheaper to get the protein requirement✓ (1)
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QUESTION 3: ANIMAL PRODUCTION, PROTECTION AND CONTROL

3.1 Milk produced by TWO cows

3.1.1 Applying additional levels of feed to a dairy cow✓
will lead to a proportional increase in milk production✓ (2)

3.1.2 (a) Average milk production✓ (1)
(b) Levels of additional feeding✓ (1)

3.1.3 Differences in environmental conditions could cause differences in milk production✓
By keeping the environmental conditions the same the only factor (variable) that could cause changes in milk production is levels of additional feeding ✓ (2)

3.1.4 Temperature✓
Wind✓
Humidity✓
Sunlight✓
Space✓
Basic feed rations✓ (Any 2) (2)

3.2 The Nguni breed

3.2.1 The Nguni is an indigenous breed✓ (1)

3.2.2 (a) Hardiness/indigenous breed/resistant to redwater and heartwater✓ (1)
(b) Wonderful temperament✓ (1)
(c) Fertility✓ (1)
(d) Cattle are named/each animal has unique colour patterns✓ (1)

3.2.3 This breed is resistant to these diseases/better immunity gathered over many years of exposure/natural selection✓
They have thicker skin that is more resistant to tick infections✓ (2)

3.2.4 Beef production/Milk production✓
Manure production✓
Biogas production✓
Agri-tourism✓ (Any 2) (2)

3.2.5 All the cattle have names linked to their patterns✓
Their unique patterns✓ (Any 1) (1)

3.3 Actions and aims of agricultural production

3.3.1
- Maximisation of profit ✓
- Specialisation and mechanisation✓
- High-performance breeds are used mostly ✓
- High use of energy, production of large amounts of animal wastes✓
- Capital intensive✓ (Any 3) (3)

3.3.2 Capital intensive✓ (1)

3.4 Schematic representation of the life cycle of a parasite

3.4.1 (a) External parasite✓ (1)
(b) Two-host tick✓ (1)

3.4.2 Eggs✓
Larvae✓
Nymph✓
Adult✓ (4)

3.4.3 Summer✓
Spring✓ (2)

3.5 Paragraph on bacteria that cause diseases

3.5.1 Cause body tissue to die away✓
Or block the blood supply to some tissues✓ (2)

3.5.2 Bacteria are small one-celled organisms that can easily be transported by wind, water or contact✓
And they can form resistant spores that can survive for long periods of time✓
They can multiply very rapidly to cause a disorder or disease ✓
(Any 2) (2)

3.5.3 Treatment with antibiotic✓ (1)
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QUESTION 4: ANIMAL PROTECTION, REPRODUCTION AND CONTROL

4.1 Diagram that represents structures in reproduction

4.1.1
A – Vagina✓
B – Cervix✓
C – Uterus✓
D – Bladder✓
E – Fallopian tube/oviduct✓ (5)

4.1.2
Funnel shaped✓
Receive the ova released from the ovary during ovulation✓ (2)

4.1.3
(a) H✓ (1)
(b) E✓ (1)
(c) C✓ (1)
(d) B✓ (1)

4.1.4
FSH/Follicle-stimulating hormone✓ (1)

4.2 Graph that represents hormones in the oestrus cycle of a cow

4.2.1
21 days✓ (1)

4.2.2
Corpus luteum✓ (1)

4.2.3
Oestrogen✓
The levels of this hormone are very high during oestrus/heat period✓ (2)

4.2.4
Ovulation✓ (1)

4.2.5
- Vulva is swollen with reddish mucus membranes✓
- Mucus strings visible from the vulva/bull string✓
- Restless/bellowing✓
- Jumps on other cows and allows the cows to jump on her✓
- Scratch marks and dirt on the side and back✓
- Allows mating with the bull ✓ (Any 2) (2)

4.3 Different processes used in animal reproduction

4.3.1
(a) B✓ (1)
(b) C✓ (1)
(c) A✓ (1)

4.3.2
- No deformities/healthy sperm cells✓
- Lively/vibrant sperm cells✓
- No blood in sperm✓
- Opaque/milky in colour✓
- High concentration of sperm✓ (Any 3) (3)

4.3.3
- To get a large number of offspring from a superior animal✓
- In the shortest time period✓ (2)

4.3.4
- Cloned animals are normally larger than normal animals✓
- The foetus will be more difficult to expel through the birthing canal during normal parturition ✓ (2)

4.4 **Diagrams that represent cows at different stages of parturition**

4.4.1 A – preparatory stage✓
D – ejection stage ✓ (2)

4.4.2 Becomes very large/swollen✓
Filled with milk/milk will drop from the udder✓
Alveoli become active✓ (Any 2) (2)

4.4.3 A✓
B✓ (2)
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TOTAL SECTION B: 105
GRAND TOTAL: 150