



Province of the  
**EASTERN CAPE**  
EDUCATION

**NATIONAL  
SENIOR CERTIFICATE**

**GRADE 12**

**SEPTEMBER 2010**

**AGRICULTURAL SCIENCES – PAPER 1**

**MEMORANDUM**

**MARKS: 150**

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This memorandum consists of 7 pages.

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**SECTION A****QUESTION 1.1**

1.1.1	A	B	<del>C</del>	D
1.1.2	A	<del>B</del>	C	D
1.1.3	A	B	C	<del>D</del>
1.1.4	<del>A</del>	B	C	D
1.1.5	A	<del>B</del>	C	D
1.1.6	A	B	<del>C</del>	D
1.1.7	<del>A</del>	B	C	D
1.1.8	A	B	C	<del>D</del>
1.1.9	A	<del>B</del>	C	D
1.1.10	A	B	<del>C</del>	D

(10x2) (20)

**QUESTION 1.2**

	ONLY A	ONLY B	A and B	None
1.2.1	<del>A</del>	B	C	D
1.2.2	A	<del>B</del>	C	D
1.2.3	A	B	C	<del>D</del>
1.2.4	A	B	C	<del>D</del>
1.2.5	A	B	<del>C</del>	D

(5x2) (10)

**QUESTION 1.4**

1.4.1	Reticulum/honeycomb/net stomach
1.4.2	Seminiferous tubules/seminal tubules/seminal vesicles
1.4.3	Biological
1.4.4	Diploid
1.4.5	Iron/Fe

(5x1) (5)

**QUESTION 1.3**

1.3.1 Queen/freemartin

1.3.2 Crop

1.3.3 Emulsification

1.3.4 Broilers

1.3.5 Hypoplasia

(5x2) (10)

**TOTAL SECTION A: 45**

**SECTION B****QUESTION 2**

- 2.1 2.1.1 A = omasum/leaf stomach✓ (1)  
 B = Reticulum/net stomach/honeycomb✓ (1)  
 C = Rumen/large stomach✓ (1)
- 2.1.2 Abomasum/true stomach/milk stomach (1)
- 2.1.3 i. B – Reticulum/net stomach/honeycomb✓✓ (2)  
 ii. A – omasum/leaf stomach✓✓ (2)
- 2.2 2.2.1 Total digestible nutrients✓ (1)
- 2.2.2 Nutritive ratio of feed X  
 $\text{DNNS} = \% \text{TDN} - \% \text{DP}$   
 $= 57,0 - 9,5 = 47,5✓$   
 $\text{NR} = 1 : \frac{47,5}{9,5}✓$   
 $= 1 : 5✓✓$  (4)
- Nutritive ratio of feed Y  
 $\text{DNNS} = \% \text{TDN} - \% \text{DP}$   
 $= 96,0 - 12,0 = 84,0✓$   
 $\text{NR} = 1 : \frac{84,0}{12,0}✓$   
 $= 1 : 7✓✓$  (4)
- 2.2.3 Feed X✓. Has narrower nutritive ratio✓ and, therefore, high protein content✓. (3)
- 2.3 2.3.1 Vitamin A/Retinol✓ (1)
- 2.3.2
- Normal vision sharpness✓
  - Increases resistance against bacterial infections✓
  - Improves fertility✓
  - Normal bone formation✓
  - Normal reproduction✓
  - Maintenance of epithelial tissues✓ (any 2x1) (2)
- 2.4 **Methods of supplementing minerals**
- Mineral licks✓
  - Drinking troughs✓
  - Supplementing rations✓
  - Dosing✓
  - Injections✓
  - Cafeteria-style mineral provision✓
  - Soil sods✓ (any 4x1) (4)

- 2.5 2.5.1 F✓ – Proventriculus/glandular stomach/true stomach✓ (2)
- 2.5.2 E – Liver✓  
H – Ventriculus/gizzard/muscle stomach✓ (2)
- 2.5.3 Pancreas✓ (1)
- 2.6 2.6.1 Protein-rich concentrate✓/ concentrate✓ (1)
- 2.6.2
- Protein✓
  - Amino acids✓ (2)

**[35]****QUESTION 3**

- 3.1 3.1.1
- Stimulate animal growth✓
  - Conserve resources✓
  - Increase profitability✓ (any 2x1) (2)
- 3.1.2
- Calcium✓
  - Phosphorus✓ (2)
- 3.1.3 To make animals grow faster/growth stimulant/to boost growth ✓ (1)
- Thyroid regulators✓
  - Hormones✓
  - Antibiotics✓
  - Tranquilizers✓ (any 3x1) (3)
- 3.2 3.2.1 Crude protein/protein✓ (1)
- 3.2.2  $7,2 + 67,5 + 6,4✓ = 81,1\%$  TDN✓ (2)
- 3.2.3

DP in Soya 35,2%		7,0✓
	14,2%	
DP in Maize 7,2%		21,0✓

Ratio of soya to maize =  $7:21✓✓/7$  parts soya: 21 parts maize✓✓/1:3✓✓ (4)

- 3.3 3.3.1
- Prevention and treatment of internal parasites✓
  - Prevention and treatment of external parasites by dipping✓
  - Determination of animal's age or classification✓
  - For medication✓
  - Inspection for diseases or injuries✓
  - For pregnancy tests✓
  - Generation of data such as growth rate, weight and inspection for market readiness✓
  - Transportation of animals✓ (any 4x1) (4)
- 3.3.2
- Docking – cutting short the tail of a young animal✓✓ (2)
  - Castration – removal of the testicles in young male animals✓✓ (2)
- 3.3.3
- Casting harness✓
  - Halter✓
  - Head clamp/gate✓
  - Electric prod✓
  - Squeeze chute✓
  - Whip ✓ (any 2x1) (2)
- 3.4 3.4.1 Battery cage system✓ (1)
- 3.4.2
- Reduction in energy expenditure or usage by chickens✓
  - Specially formulated feed delivered directly to animals✓
  - Temperature control mechanisms are present✓
  - Animals are controlled and closely supervised✓
  - Farmer achieves maximum production from animals✓
  - Sick animals are quickly identified and isolated✓ (any 3x1) (3)
- 3.5
- Exposed to extreme climatic conditions✓
  - Exposed to pests and diseases✓
  - Decreased production because of exposure to adverse conditions✓
  - Prone to theft✓ (4)
- 3.6 3.6.1 Greater percentage of animals in the herd produce at the average level✓; Small percentage of animals produce high above the average✓; Small percentage produce far below average✓. (max: 1) (1)
- 3.6.2 Selected offspring from the parental stock were better producers of milk✓ (1)

**QUESTION 4**

4.1 4.1.1

	DESCRIPTION	NUMBER IN DIAGRAM A	LETTER IN DIAGRAM B
1	Production of oestrogen	7✓	C✓
2	Fertilization takes place	8✓	B✓
3	Vagina	3✓	E✓
4	Secretion of progesterone	7✓	C✓

(8)

4.1.2 Cow cannot become pregnant✓; sperms cannot enter the uterus through cervix✓ (2)

4.1.3 Substantial number of cows cannot be made pregnant✓; calving rate✓ and milk production will decline✓. Farmer will lose financially✓. (any 2x1) (2)

4.2 4.2.1

- Pro-oestrus = 12%✓
- Oestrus/heat period = 4%✓
- Met-oestrus = 15%✓
- Di-oestrus = 69%✓

(4)

4.2.2

- 4%

(1)

4.3 4.3.1

- Removal of corpus luteum✓
- Administration of progesterone✓
- Administering gonadotropic hormones (FSH and LH) ✓
- Administration of oestrogen✓

(any 2x1)

(2)

4.3.2

- To maintain viability of sperms✓
- To provide nutrients for sperms✓
- Preventing of bacterial growth✓
- Increase volume of semen/more dosage can be made ✓
- To protect sperms against pH changes✓
- To protect sperms against cold shocks✓

(any 2x1)

(2)

4.3.3

- Quality of herd is improved within a short time✓
- Semen from proven bulls can be used without buying them✓

(2)

4.4 4.4.1

Prolactin/lutrotropic hormone✓

(1)

4.4.2

- Stimulates peristaltic movements of female reproductive organs during mating✓
- Responsible for the release of milk✓
- Stimulates peristaltic movements during parturition✓

(3)

**4.5 Diseases**

- Isolation of sick animals✓
- Vaccination✓
- Handling manure✓
- Provision of shelters✓
- Sanitation✓
- Controlling pests and parasites✓ (any 3x1) (3)

4.6 4.6.1 External parasite/Exo-parasite (1)

4.6.2 Three (3) (1)

- 4.7
- Animal disease Act✓
  - Abattoir hygiene Act✓
  - Fertilizers, farm feeds, agricultural remedies and stock remedies Act✓
  - Livestock improvement Act✓
  - Fencing Act✓ (any 3x1) (3)
- [35]**

**TOTAL SECTION B: 105**

**GRAND TOTAL: 150**