This memorandum consists of 9 pages.
SECTION A

QUESTION 1.1

<table>
<thead>
<tr>
<th>1.1.1</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
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<tbody>
<tr>
<td>1.1.2</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
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<tr>
<td>1.1.3</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
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<td>1.1.4</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
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<tr>
<td>1.1.5</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
</tr>
<tr>
<td>1.1.6</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
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<tr>
<td>1.1.7</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
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<td>1.1.8</td>
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<td>B</td>
<td>C</td>
<td>D</td>
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<tr>
<td>1.1.9</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
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<tr>
<td>1.1.10</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
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</tbody>
</table>

(10 x 2) (20)

QUESTION 1.2

<table>
<thead>
<tr>
<th>1.2.1</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
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<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
</tr>
<tr>
<td>1.2.3</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
</tr>
<tr>
<td>1.2.4</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
</tr>
<tr>
<td>1.2.5</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
</tr>
</tbody>
</table>

(5 x 2) (10)

QUESTION 1.3

1.3.1 Gross Domestic Production/Gross Domestic Product √√
1.3.2 Proventriculus √√
1.3.3 Lobola √√
1.3.4 Cardiac sphincter √√
1.3.5 Docking/Tail Docking √√

(5 x 2) (10)

QUESTION 1.4

1.4.1 Gestation √
1.4.2 Villi √
1.4.3 Super ovulation √
1.4.4 Gross energy √
1.4.5 Concentrates √

(5 x 1) (5)

TOTAL SECTION A: 45
SECTION B

QUESTION 2: ANIMAL NUTRITION

2.1 2.1.1 (a) F √ (1)
(b) E √ (1)
(c) F √ (1)
(d) E √ (1)
(e) G √ (1)

2.2 2.2.1 Small intestines √ (1)

2.2.2  
- Folds that increase the surface area. √
- Finger like projections called villi. √
- Very long with blood capillaries. √ (3)

2.3 2.3.1

<table>
<thead>
<tr>
<th>Roughages</th>
<th>Concentrates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Little digestible nutrient</td>
<td>High digestible nutrient √</td>
</tr>
<tr>
<td>High crude fibre content</td>
<td>Low crude fibre √</td>
</tr>
<tr>
<td>Bulky</td>
<td>Not bulky √</td>
</tr>
<tr>
<td>Cheap to buy</td>
<td>Expensive to buy √</td>
</tr>
<tr>
<td>Less than 60% TDN</td>
<td>More than 60% TDN √</td>
</tr>
</tbody>
</table>

(Any 4) (4)

2.3.2 Coefficient of digestibility = \[
\frac{\text{Dry material intake (kg)} - \text{Dry mass of manure}}{\text{Dry material intake (kg)}} \times \frac{100}{1}
\]

- Moisture content of feed = 58/100 x 3 200 g = 1 856 g √
- Dry matter content of feed = 3 200 g – 1 856 g = 1 344 g √
- Moisture content of faeces = 45/100 x 1 250 g = 562,5 g √
- Dry matter faeces = 1 250 – 562, 5 = 687,5 g √
- Dry matter digested and absorbed = 1 344g – 687,5 g = 656,5 g √
- Coefficient of digestibility = 656,5g/1344g x 100 = 48,85% √
- A mark should be allocated for the formula √ (Any 6) (6)
2.3.3  
- Grinding √
- Pelleting √
- Boiling √
- Roasting √
- Crushing and rolling √
- Cutting of plants √
- Method of making lucerne √  
(Any 3)  (3)

2.4  
2.4.1  Zinc √  
(1)

2.4.2  Calcium √  
(1)

2.4.3  Vitamin B₁₂ / Magnesium √  
(1)

2.4.4  Vitamin K √  
(1)

2.4.5  Iron √  
(1)

2.4.6  Cobalt √  
(1)

2.5  
- Antibodies √
- Tranquilisers √
- Hormones √
- Thyroid regulators √
- Anabolic compounds √  
(Any 3)  (3)

2.6  Nutritive Ratio  = \frac{1}{\% \text{ Digestible non–nitrogen compound}} \sqrt{\text{Digestible protein}}  

\text{Digestible non-nitrogen compounds} = 75\% - 15\% = 60\% \sqrt{\frac{1}{15\%}}  

= 1:4 \sqrt{\frac{1}{15\%}}  
= 1:4 √  
(4)  [35]
QUESTION 3: ANIMAL PRODUCTION

3.1 3.1.1

<table>
<thead>
<tr>
<th>INTENSIVE FARMING</th>
<th>EXTENSIVE FARMING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less energy used</td>
<td>More energy used √</td>
</tr>
<tr>
<td>Animals are in enclosures</td>
<td>Out of enclosure/Animals are moving freely √</td>
</tr>
<tr>
<td>Kept in feedlots</td>
<td>Search for food for themselves √</td>
</tr>
<tr>
<td>High quality carcass</td>
<td>Low quality carcass √</td>
</tr>
<tr>
<td>More production</td>
<td>Low production √</td>
</tr>
<tr>
<td>Less exposed to diseases</td>
<td>More exposed to diseases √</td>
</tr>
</tbody>
</table>

(Any 4) (4)

3.1.2
- Diseases √
- Theft √
- Low production √
- Exposed to extreme climatic conditions. √
- Exposed to wild animals. √
(Any 3) (3)

3.1.3
- Building kraals √
- Planting trees √
(Any 2) (2)

3.1.4
- Feedlots √

(1)

3.2 3.2.1
- Colostrum/beestings √

(1)

3.2.2
- Contains antibodies. √
- Essential for growth and yellowish in colour. √
- Provide vitamins and proteins/nutrients. √
(Any 2) (2)

3.2.3
- Week 8 √

(1)

3.2.4
- Week 2 √

(1)

3.2.5
- Quietness/whistling √
- Giving food while milking √
- Play musical instrument √
- Massage the udder. √
(Any 2) (2)

3.3 3.3.1
- Poor penetration into the fur and skin. √

(1)

3.3.2
- Mites / ascaris. √

(1)
3.3.3 • Racin is easily obtainable from the caster bean plant. √
• The extraction process of racin is not complicated. √
• No threat of environmental pollution. √
• They are not highly poisonous to the human beings/farm workers. √
• Very cheap √

(Any 2) (2)

3.3.4 • Acaricide/contact poison/miticide √
• Systematic formulation/drugs √
• Racin/organic extracts √

(3)

3.4 3.4.1 • Wire netting for ventilation. √
• Brick wall to keep the building firm. √
• Over hang 60 cm roof height for cooling. √
• Ventilation facing North Pole for warmth. √

(4)

3.4.2 • High production √
• Maximum security √
• Control √
• Easy to fight diseases. √
• Minimise extreme temperatures. √

(Any 3) (3)

3.5 3.5.1 • Permit √
• Red flag √
• Separation according to sex, age etc. in a transport. √
• Truck must be strong and well ventilated. √
• No sick and pregnant animals are allowed for transportation. √
• Truck must not be slippery. √
• No overloading/overcrowding is allowed. √

(Any 2) (2)

3.5.2 • Rigor mortis √
• Bruises √
• Low grading of carcasses. √
• Stampede √

(Any 2) (2)

[35]
QUESTION 4: ANIMAL REPRODUCTION, PROTECTION AND CONTROL

4.1  4.1.1 Artificial insemination √

4.1.2 Fertilisation √

4.1.3 Pregnancy √

4.1.4 Parturition √

4.1.5 Lactation √ (5)

4.2  4.2.1 A = Roundworm. √

    B = Flukeworm √

    C = Tapeworm √ (3)

4.2.2 • Tapeworm. √ (1)

    • Flukeworm √ (1)

4.2.3 • Stock losses due to death. √

    • Loss of production. √

    • Degrading of carcass. √ (Any 2) (2)

4.2.4 • Quarantine of imported animals. √

    • Quarantine of sick animals. √

    • Isolation of sick animals. √

    • Destroying carcass. √

    • Controlling of vector. √

    • Vaccination and dipping. √ (Any 4) (4)
4.3 4.3.1

Criteria to Mark:

- Correct heading √
- Key √
- Labelling Y-axis √
- Labelling X-axis √
- Accurate numbering √
- Neatness √
- Correct plotting/Accuracy of two graphs √ (Any 6) (6)

4.3.2 As oestrogen levels decrease, √ the progesterone levels increase √ and vice versa. √ (3)

4.4 4.4.1 B – Fallopian tube/ampulla √ (1)

4.4.2 For nutrition/gases/antibodies √
- Protection against shock
- Excretion of waste. √
- Attaches the embryo to the wall of the uterus. √ (Any 2) (2)

4.4.3 Ovulation/luteinising hormone/oestrogen. √√ (2)

4.4.4 Miscarriage √
- Mummification √
- Maceration √
- Reabsorption of embryo. √
- Excess amniotic fluid. √ (Any 2) (2)
4.4.5

- Mucus secreted on her vulva. √
- Soiling tail. √
- Searching and lowing. √
- Vulva swells and reddish. √
- Bellowing noise. √
- Stops eating. √
- Udder painfully swollen and often licks milk. √
- Urinates and defecates frequently. √
- Restlessness/Moving around. √

(Any 3) (3)

[35]

TOTAL SECTION B: 105

GRAND TOTAL: 150