These marking guidelines consist of 10 pages.
SECTION A

QUESTION 1

1.1 1.1.1 C ✓✓
1.1.2 D ✓✓
1.1.3 A ✓✓
1.1.4 D ✓✓
1.1.5 C ✓✓
1.1.6 B ✓✓
1.1.7 B ✓✓
1.1.8 D ✓✓
1.1.9 A ✓✓
1.1.10 C ✓✓

(10 x 2) (20)

1.2 1.2.1 None ✓✓
1.2.2 Both A and B ✓✓
1.2.3 A only ✓✓
1.2.4 B only ✓✓
1.2.5 A only ✓✓

(5 x 2) (10)

1.3 1.3.1 Popping/micronising/roasting ✓✓
1.3.2 Homoeothermic/endothermic ✓✓
1.3.3 Superovulation ✓✓
1.3.4 Buffer ✓✓
1.3.5 Progesterone ✓✓

(5 x 2) (10)

1.4 1.4.1 Cardiac ✓
1.4.2 Blue ✓
1.4.3 Hypoplasia ✓
1.4.4 Amnion ✓
1.4.5 Semen straw ✓

(5 x 1) (5)

TOTAL SECTION A: 45
SECTION B

QUESTION 2: ANIMAL NUTRITION

2.1 An alimentary canal of a farm animal

2.1.1 Classification of the animal
Non-ruminant ✓

2.1.2 Reason visible from the diagram
It has a simple/single/monogastric stomach ✓

2.1.3 TWO functions of the digestive juice in A
- Changes the pH from acid to alkaline/helps to neutralise the acid from the gastric juices ✓
- Increases the solubility of fats ✓
- Emulsification of fats ✓
- Promotes the absorption of fatty acids and glycerol ✓
- Assists with the absorption of fat-soluble vitamins ✓
- Acts as an antiseptic ✓
- Acts as a detoxifying agent ✓
- Activates lipase ✓
- Lubrication of the alimentary canal ✓
- Enhances peristalsis ✓

(Any 2) (2)

2.1.4 Enzyme digesting fats
Lipase ✓

(1)

2.2 Types of feeds

2.2.1 Classification of feed types
A - Concentrates ✓
B - Roughages ✓

(1)

2.2.2 Group of feed type C
Protein rich feeds ✓

(1)

2.2.3 TWO examples of feed type D
- Maize meal ✓
- Oats meal ✓
- Barley meal ✓
- Sorghum meal ✓
- Rye meal ✓
- Wheat meal ✓

(Any 2) (2)

2.2.4 Justification of feeding feeds labelled B to ruminants
- Roughages help to prevent bloating ✓
- Supply the necessary bulkiness of their ration ✓
- Enhance rumen development and functioning ✓
- Good roughages stimulate production and growth ✓
- Good roughages are a source of minerals ✓

(Any 2) (2)
2.3 **Nutritional composition of feeds**

2.3.1 **Most suitable feed for young growing farm animals**

Feed B ✓

(1)

2.3.2 **Reason for the answer in QUESTION 2.3.1**

- Feed has a narrow nutritive ratio ✓
- Rich in proteins necessary for growth ✓
- Has more protein than carbohydrates and fats ✓

(Any 1) (1)

2.3.3 **Percentage of digestible non-nitrogen nutrients in feed A**

\[
32\% + 38\% = 70\%
\]

(2)

2.4 **Digestibility of a hay**

2.4.1 **Comment on the suitability of the hay**

- Not suitable ✓

(1)

**Reason**

- Has a high fibre content/hay is poorly digestible/45% ✓
- Cannot be fed alone/needs supplementation ✓
- Low protein content ✓

(Any 1) (1)

2.4.2 **TWO measures to improve the digestibility of hay**

- Supplementation with NPN ✓
- Supplementation with molasses ✓
- Treatment with agents that improve its nutritive value ✓
- Milling ✓
- Pelleting ✓
- Softening ✓

(Any 2) (2)

2.5 **Fodder flow programme**

2.5.1 **TWO problems to be encountered by the farmer**

- Shortage/deficit of feed is 174 000kg /feed supply during dry season is 216 000kg whilst feed required is 390 000kg ✓
- Increased consumption due to pregnancy and lactation ✓

(2)

2.5.2 **ONE precautionary measure a farmer needs to take**

- Store feed/feed reserve for the dry season ✓
- Reschedule the breeding season to fall during wet season ✓
- Reduce the number of animals before dry season/culling ✓
- Good pasture/fodder flow management practises ✓

(Any 1) (1)
2.5.3 **Amount of feed required per month**

\[
100 \times 21\text{kg} \times 30 = 63\,000\text{kg} \\
= 63\,000\text{kg} \\
\frac{1000}{1000} = 63\text{ tons}
\]

**OR**

\[
360\,000\text{kg} + 390\,000\text{kg} = 750\,000\text{kg} \\
\frac{12}{12} = 62\,500\text{kg} \\
\frac{1000}{1000} = 62,5/63\text{ tons}
\]

(3)

2.6 **Feed components**

2.6.1 **Feed nutrient supplying most energy**

Fats ✓

(1)

2.6.2 **Units of measuring energy**

Mega joule/MJ/kilojoule/kJ/Joule/J ✓

(1)

2.6.3 **TWO reasons for calculating energy value of feeds to a farmer**

- To determine the feeding standards ✓
- To be able to provide a recommended diet ✓
- Helps in the formulation of rations ✓

(Any 2)

(2)

2.7 **Minerals and vitamins**

2.7.1 **Completion of missing information**

A Zinc/Zn ✓

(1)

B Metritis/inflammation of the uterus ✓

(1)

C Stiff lamb/muscle dystrophy/white muscle ✓

(1)

2.7.2 **Methods of supplementing nutrients**

(a) Injections-supplementary ration ✓

(2)

(b) Dissolve them in drinking water/dosing ✓

[35]

**QUESTION 3: ANIMAL PRODUCTION, PROTECTION AND CONTROL**

3.1 **Pie chart on the size of the area, the number and type of farm animals**

3.1.1 **Animal under intensive conditions**

Sheep ✓

(1)

3.1.2 **Reason for the answer in QUESTION 3.1.1**

- 100 sheep are kept on a small area ✓
  **OR**

- A large number of sheep is kept on a small area ✓

(1)
3.1.3 Identification of farm animals
(a) Poultry ✓ (1)
(b) Cattle/goats ✓ (1)
(c) Sheep/goats ✓ (1)

3.1.4 Calculation of the % of sheep
\[ \frac{25 + 100 + 30 + 10}{165} \times 100 = 60.61\% \]

3.2 Animal diseases

3.2.1 Animal diseases
A - Anthrax ✓ (1)
B - Vaccination/inoculation ✓ (1)
C - Mosquitoes ✓ (1)
D - Blood stained nasal discharge/abortions/fever ✓ (1)
E - Red/brown urine/fever ✓ (1)

3.2.2 Role of the state
Vaccination/inoculation ✓ (1)

3.2.3 TWO duties of stock owners to prevent the spread of deadly diseases
- Burn the carcasses ✓
- Dispose of all the manure/bedding/ other contaminated materials ✓
- Clean/disinfect housing ✓
- Report to the authorities ✓
- Quarantine/isolate affected animals ✓
- Treat animals with antibiotics ✓
- Vaccination/inoculation ✓ (Any 2) (2)

3.3 Measures by the state

3.3.1 Hygiene/legislation ✓ (1)

3.3.2 Quarantine/ban on imports/legislation ✓ (1)

3.3.3 Reporting notifiable disease to authorities/veterinary services/SAPS/ legislation/destroy infected animals ✓ (1)

3.4 Data is captured in a graph

3.4.1 Deduction from the graph the range it took lambs to reach 1,8 kg
From day 8 to 24 ✓ (1)
3.4.2 The tabulation of data

The table below shows the weight gain of lambs over a period of 40 days.

<table>
<thead>
<tr>
<th>Days</th>
<th>Weight gain (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>400</td>
</tr>
<tr>
<td>8</td>
<td>400</td>
</tr>
<tr>
<td>12</td>
<td>1200</td>
</tr>
<tr>
<td>16</td>
<td>1200</td>
</tr>
<tr>
<td>20</td>
<td>1200</td>
</tr>
<tr>
<td>24</td>
<td>1800</td>
</tr>
<tr>
<td>28</td>
<td>1800</td>
</tr>
<tr>
<td>32</td>
<td>1800</td>
</tr>
<tr>
<td>36</td>
<td>1000</td>
</tr>
<tr>
<td>40</td>
<td>0</td>
</tr>
</tbody>
</table>

Criteria/rubric/marking guidelines

- Correct heading ✓
- Correct labelling of days and weight gain ✓
- Populated table ✓
- Correct unit (g) ✓
- Correct reading of the days ✓
- Correct reading of the weight gain ✓  (6)

3.5 Structures, apparatus and appliances used to handle and manage farm animals

3.5.1 Fence ✓  (1)
3.5.2 Rope/halter/immobiliser/chute/crush ✓  (1)
3.5.3 Elastrator/rubber ring/burdizzo/surgical blade/knife ✓  (1)
3.5.4 Shed/housing ✓  (1)

3.6 External parasites

3.6.1 Identification of the external parasite
Mite ✓  (1)

3.6.2 The symptom of a severe infestation of the parasite
Mange/scab ✓  (1)

3.6.3 One visible sign of the symptom mentioned in QUESTION 3.6.2
- Severe itching/rubbing/scratching/skin irritation ✓
- Wool/hair loss ✓
- Dermatitis/inflammation of the skin ✓
- Hairless patches/lesions ✓
- Animal does not feed well/weight loss ✓  (Any 1)  (1)
3.6.4 **TWO economic implications of the parasite**
- Loss in production/income/yield ✓
- Quality of products will be damaged/reduced ✓
- Financial implications/increased cost ✓
- Cost of labour/time consuming ✓
(Any 2) (2)

**QUESTION 4: ANIMAL REPRODUCTION**

4.1 *A reproductive process occurring in cows*

4.1.1 **Identification of the process above**
- Milking/lactation ✓ (1)

4.1.2 **THREE visible stimuli from the picture**
- The milking equipment ✓
- The calf ✓
- Touching of the udder/milker ✓
(3)

4.1.3 **Hormone responsible for the contractions of the glandular cavity during the process**
- Oxytocin ✓ (1)

4.1.4 **The reproductive stage that lasts for 282 days in cattle**
- Pregnancy/gestation ✓ (1)

4.2 *Stages of the oestrus cycle*

4.2.1 **Labels of the phases of oestrus cycle**
- A - Oestrus ✓ (1)
- B - Dioestrus ✓ (1)
- C - Met oestrus ✓ (1)
- D - Pro oestrus ✓ (1)

4.2.2 **Indication of the letters representing the stage of oestrus**
- (a) A ✓ (1)
- (b) C ✓ (1)

4.3 *Process generally used in the reproduction of farm animals*

4.3.1 **The process illustrated in the diagram**
- Nuclear transfer/cloning ✓ (1)

4.3.2 **Identification of the cells**
- A - Recipient cell with nucleus/egg cell/ovum ✓ (1)
- B - The nucleus of the donor cell ✓ (1)
- D - The fused cell ✓ (1)

4.3.3 **TWO different types of the process**
- Reproductive cloning ✓
- Therapeutic cloning ✓ (2)
4.4 Apparatus used in the Artificial Insemination (AI) process

4.4.1 Identification of the apparatus
A - Artificial vagina ✓
B - Pistolette ✓
C - Nitrogen flask/canister/tank ✓

4.4.2 Function of each apparatus
A - Collection of semen ✓
B - For the deposition of semen in the cow during AI ✓
C - Storage of semen for longer periods ✓

4.4.3 TWO basic requirements for the collection of semen from bulls
- Should be close to a laboratory ✓
- Equipment must be clean/sterilised ✓
- Availability of appropriate equipment/artificial vagina ✓
- Male animal must be clean/healthy ✓
- Warm collecting vial/placed in a water bath/prevent temperature shock ✓
- Personnel must be trained/experienced ✓
- Floor not slippery ✓
- Semen must be protected from direct sunlight ✓
- Teaser cows availability ✓

4.5 Synchronisation schedule of female animals

4.5.1 Identification of the process
Synchronisation of oestrus ✓

4.5.2 TWO disadvantages of a synchronisation schedule in cattle
- Poor nutrition/body condition/health will affect the process negatively ✓
- Needs good/expensive facilities ✓
- Labour/time intensive ✓
- Involves skilled management and technologies ✓

4.5.3 TWO techniques used in the synchronisation of female animals
- Synthetic progesterone/progestin/oestradiol ✓
- Co-Synch/gonadotropin/co-synch synchronisation ✓
- Ear patches/implants ✓
- Vaginal insurgents ✓

4.5.4 Indication of the time (day) when the cows will be inseminated
Day 35 – 40 ✓
4.6 THREE causes for lack of libido

- Immaturity ✔
- Inexperience ✔
- Diseases ✔
- Underfeeding/overfeeding/malnutrition ✔
- Old age/senility ✔
- Overwork/exhaustion/over exertion ✔
- Improper handling/stress ✔
- Lack of testosterone ✔
- Temperament ✔
- Environment ✔

(Any 3) (3) [35]

TOTAL SECTION B: 105

GRAND TOTAL: 150