MARKING GUIDELINES

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SOUTH AFRICAN COMPREHENSIVE ASSESSMENT INSTITUTE

SUID-AFRIKAANSE KOMPREHENSIEWE ASSESSERINGSINSTITUUT

SECTION A

QUESTION 1

1.1 MULTIPLE CHOICE

1.1.1 D✓✓
1.1.2 B✓✓
1.1.3 A✓✓
1.1.4 B✓✓
1.1.5 A✓✓
1.1.6 C✓✓
1.1.7 B✓✓
1.1.8 B✓✓
1.1.9 D✓✓
1.1.10 A✓✓ (10 x 2) **(20)**

1.2 MATCHING COLUMN

1.2.1 B only✓✓
1.2.2 Both A and B✓✓
1.2.3 Both A and B✓✓
1.2.4 A only✓✓
1.2.5 None✓✓ (5 x 2) **(10)**

1.3 AGRICULTURAL TERMS

1.3.1 Cud✓✓
1.3.2 Crush/crush pen/race✓✓
1.3.3 Embryonic✓✓
1.3.4 Spermatogenesis✓✓
1.3.5 Prolapse ✓✓ (5 x 2) **(10)**

1.4 UNDERLINED WORDS

1.4.1 rumen✓
1.4.2 proglottids ✓
1.4.3 testes✓
1.4.4 adult donor cell✓
1.4.5 oxytocin✓ (5 x 1) **(5)**

TOTAL SECTION A: [45]

SECTION B

QUESTION 2: ANIMAL NUTRITION

2.1 Alimentary canals of farm animals

2.1.1 Diagram A – Ruminant / Cow / Cattle / Sheep ✓
Diagram B – Single stomach animal / Monogastric / Pig ✓
Diagram C – Poultry / Chicken ✓ (3)

2.1.2 **Process of digestion in H and K**

H – chemical digestion in the abomasum✓ where food is stored, moistened, and mixed with digestive enzymes✓ (2)

K – mechanical digestion in the ventriculus ✓ which has thick, muscular walls for grinding feed in the presence of small stones for grinding feed ✓ (2)

2.1.3 **How part A is adapted to perform its function**

Rumen / reticulo-rumen is well developed and large (great volume) ✓
to cater for the bulky and fibrous roughages ✓
formed like a fermentation organ or vessel ✓
and is ideal for microbe/bacteria/protozoa activity / cellulase secretion by microbes ✓
has a warm and moist environment / correct pH / optimum pH ✓
Finger like projections in the wall of the rumen increasing the surface area✓
(Any 3) (3)

2.1.4 **Function of part L**

Two blind caeca are where microbial fermentation takes place✓ (1)

2.2 Digestibility of feed

2.2.1 **Calculation of digestibility of feed**

Hay :12% of 16 kg=1,92 kg ✓
16 kg -1,92 kg =14,08 kg dry material ✓

$$\text{Digestible coefficient} = \frac{\text{DM intake (kg) - DM of manure (kg)}}{\text{DM intake (kg)}} \times 100 \checkmark$$

$$= \frac{14{,}08 \text{ kg} - 4 \text{ kg}}{14{,}08 \text{ kg}} \times 100/1 \checkmark$$

= 71,59% ✓ or 71,6% (5)

2.2.2 **Digestibility of a feed**

The actual quantity of feed absorbed by an animal ✓ (1)

2.2.3 **Crude fibre content influences the digestibility**

- Crude fibre is not easily digestible/the more the crude fibre content ✓
- the harder it is to digest the feed ✓ the less the digestibility of the feed becomes ✓ (3)

2.2.4 **Methods to improve the digestibility of animal feeds**

- Grinding✓
- Pelleting✓
- Boiling✓
- Roasting✓
- Crushing✓
- Soaking ✓

(Any 3) (3)

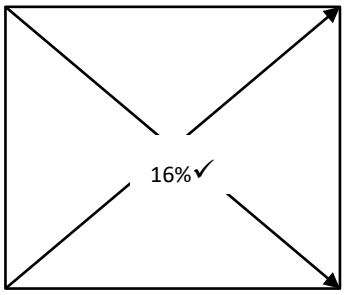
2.3 **Feeds' nutritional value**

2.3.1 **Suitable feeds:**

(a) Silage ✓ (1)
(b) Lucerne ✓ (1)
(c) Maize ✓ (1)

2.3.2 **Pearson square calculation**

Sunflower oil cake meal 37% — 7,1 parts sunflower oil cake meal✓



Maize meal 8,9% — 21 parts maize meal✓

7,1 parts sunflower oil cake meal + 21 parts maize meal = 28,1
7,1 : 21 ratio✓
Mix 7,1 parts of sunflower meal with 21 parts of maize meal ✓ (5)

2.3.3 **Calculation for feed mixture**

Sunflower oil cake meal
7,1 x 1200kg ✓ = 303,2kg✓
28,1

Maize meal
21 x 1200kg✓ = 896,8kg✓
28,1 (4)

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QUESTION 3: ANIMAL PRODUCTION, PROTECTION AND CONTROL

3.1 Animal behaviour

3.1.1 E ✓ (1)

3.1.2 B ✓ (1)

3.1.3 B / D / E ✓ (1)

3.1.4 C / D ✓ (1)

3.1.5 A ✓ (1)

3.2 Housing of farm animals – chicken housing

3.2.1 Production system

Broiler production /Intensive production ✓ (1)

3.2.2 Biosecurity measures

- Broilers kept in cages to prevent contact with wild birds✓
- Workers wear protective clothing✓
- Hairnets worn to prevent contamination in the cages✓
- Area is fenced around the cages✓
- All the broilers are the same age ✓

(Any 3) (3)

3.2.3 Labour intensity

- Labour intensive ✓
- Manual feeders and drinkers✓
- Curtains opened manually✓ (3)

3.2.4 Brooding

Potential problem

(a) Keeping the young birds warm✓ (1)

Solution to the problem

(b) By brooding or providing heating for the chicks✓ (1)

3.3 Maintaining animal health

3.3.1 Economic implications of animal diseases

- Banning of export of animals or animal products has negative financial impacts on the producers who depend on them for a livelihood. ✓
- International trade decreases, which affects the economies of the countries concerned.✓
- The outbreak of animal diseases impacts food security. Meat of infected animals is unsuitable for human consumption.✓
- Decreased production and loss of income has an impact on job security and livelihood of the population.✓
- The decrease in milk production (for example, due to mastitis) causes a loss of income.✓
- Mastitis causes a change in the composition of milk and therefore reduces the quality of the milk but also the quality of many related dairy products.✓
- Wool production decreases when sheep are infected with lumpy wool fungus and it is also downgraded and the price decreases.✓
- Costs to control, prevent and treat animal diseases are high, which increases the costs of production.✓

(Any 4) (4)

3.3.2 Kinds of injections used to treat animals

(a) Intramuscular injection

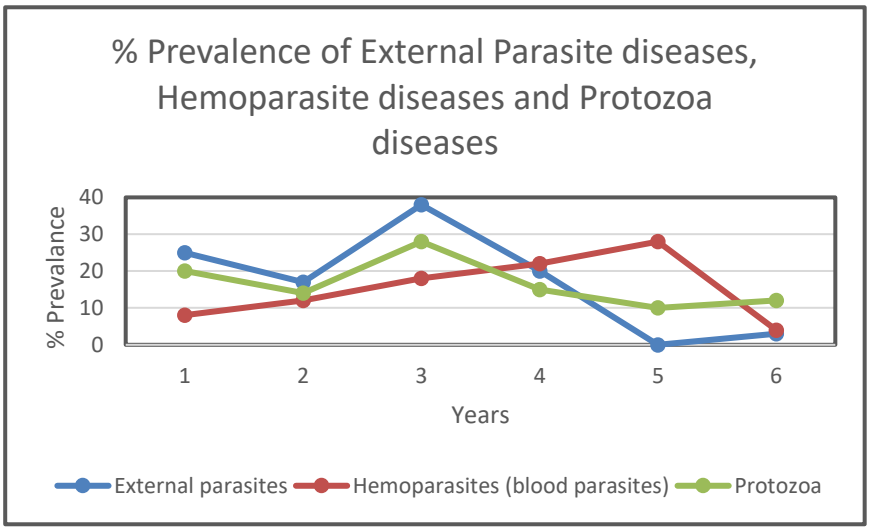
Administered deep into the muscle, ✓
Often in the neck area, also in the rump (dairy cattle) ✓ (2)

(b) Subcutaneous injection

Administered directly into the connecting tissue beneath the skin✓
Half-way up the neck in front of the shoulder or over the ribs well behind the shoulder✓ (2)

3.4 Parasite diseases

3.4.1 Line graph of Prevalence of parasite diseases



Marking guideline graph

Heading	1
x-axis heading and scale	2
y-axis heading and scale	2
3 correctly plotted lines	3

(8)

3.4.2 Diseases contracted by both animals and humans

Zoonotic diseases ✓ (1)

3.4.3 Notifiable disease caused by an external parasite

Mange ✓ (1)

3.4.4 Role of the State according to the Animal Diseases Act

Control measures will be put in place by the state✓
Quarantine services will be deployed to isolate and detain animals with the disease✓
Movement permits will be issued to control the movement of animals to prevent spread of disease after inspection by the state veterinarian✓
Owners and community will receive communication from the state✓
Reports will be released from DALRRD regarding the disease ✓ (Any 3) (3)

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QUESTION 4: ANIMAL REPRODUCTION

4.1 Sperm cell morphological defects

4.1.1 Identification of part 2

2 – middle piece/body/mid-piece/neck ✓ (1)

4.1.2 Normal sperm

A/B/C/E ✓ (1)

4.1.3 Number of the section

(a) 3 ✓ (1)
(b) 1 ✓ (1)

4.1.4 Structure where sperm are produced

Testes/primary male sex organ ✓ (1)

4.1.5 Congenital factors that may disturb the formation of sperm cells

- Hypoplasia✓
- Cryptorchidism✓
- Sperm defects✓ (3)

4.2 Female mammal reproductive tract

4.2.1 Parts of the female reproductive tract

A Ovary ✓
B Graafian follicle ✓
C Ovum /egg cell ✓
D Infundibulum ✓
E Corpus luteum ✓ (5)

4.2.2 Process occurring at C

Ovulation ✓ (1)

4.2.3 Hormones

(a) Follicle stimulating hormone ✓ (1)
(b) Oestrogen/Luteinising hormone ✓ (1)
(c) Oestrogen ✓ (1)
(d) Progesterone ✓ (1)

4.2.4 **Adaptability of the infundibulum**

- Contains hair-like structures/cilia✓ for movement of the ova ✓
  OR
- Wider at the edge/bell shaped/funnel shaped ✓adapted for holding/ capturing the ova ✓ (2)

4.3 **Artificial Insemination**

4.3.1 **AI rather than a bull**

- AI sires are thoroughly screened and tested ✓
- Faster genetic progress ✓
- Genetics available from all over the world ✓
- Very few dairy stud breeders to buy bulls from ✓
- Bull can be dangerous ✓
- Easier to control breeding with AI ✓
- Bull may get injured ✓
- Prevent cows being injured during natural mating ✓
- Reduce disease spread ✓

(Any 4) (4)

4.3.2 **Factors to control when handling semen**

- Exposure to light ✓
- Exposure to water ✓
- Exposure to high temperatures ✓ (3)

4.3.3 **Signs of oestrus in cattle**

- Isolation✓
- Bellowing at the fence✓
- Bullying or fighting with other cows✓
- Mounting other animals✓
- Staring over the fence as if looking for a lost calf✓
- Scuffed tail head from being ridden by other cows✓
- Dirty flanks from being mounted by other animals✓
- Bull string or mucous secretion from the vulva✓
- Sniffing other cows✓
- Taking more interest in bulls ✓

(Any 4) (4)

4.4 **Lactation**

4.4.1 Lactation is the period of milk production that starts soon after parturition ✓and continues for an average of about 305 days in the cow. ✓ (2)

4.4.2 **Dry period**

The non-lactating period. ✓ The cow is 'dried off' about 60 days before her next parturition. ✓There is no suckling or milking because of the needs of the new foetus ✓and the udder needs time to prepare for milk production in new lactation cycle. ✓ (Any 2) (2)

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TOTAL SECTION B: [105]

GRAND TOTAL: [150]