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basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

SENIOR CERTIFICATE EXAMINATIONS/ NATIONAL SENIOR CERTIFICATE EXAMINATIONS

AGRICULTURAL SCIENCES P1

MAY/JUNE 2024

MARKING GUIDELINES

MARKS: 150

These marking guidelines consist of 12 pages.

SECTION A**QUESTION 1**

1.1	1.1.1	B ✓✓		
	1.1.2	D ✓✓		
	1.1.3	A ✓✓		
	1.1.4	C ✓✓		
	1.1.5	B ✓✓		
	1.1.6	C ✓✓		
	1.1.7	D ✓✓		
	1.1.8	A ✓✓		
	1.1.9	B ✓✓		
	1.1.10	C ✓✓	(10 x 2)	(20)
1.2	1.2.1	None ✓✓		
	1.2.2	Both A and B ✓✓		
	1.2.3	B only ✓✓		
	1.2.4	B only ✓✓		
	1.2.5	A only ✓✓	(5 x 2)	(10)
1.3	1.3.1	Retro/reverse peristalsis/regurgitation ✓✓		
	1.3.2	Sustainable medication/integrated diseases management ✓✓		
	1.3.3	Ovigenesis/oogenesis ✓✓		
	1.3.4	Repeat breeders ✓✓		
	1.3.5	Impotence ✓✓	(5 x 2)	(10)
1.4	1.4.1	Diffusion/passive absorption ✓		
	1.4.2	Plywood board ✓		
	1.4.3	Oestrus ✓		
	1.4.4	Foetal ✓		
	1.4.5	Pistolette/insemination gun ✓	(5 x 1)	(5)

TOTAL SECTION A: 45

SECTION B**QUESTION 2: ANIMAL NUTRITION****2.1 The alimentary canal of a farm animal****2.1.1 Classification of the farm animal**

Non-ruminant/monogastric ✓ (1)

2.1.2 Name of the farm animal

Fowl/poultry/chicken ✓ (1)

2.1.3 Reason based on the caeca

There are two caeca present ✓ (1)

2.1.4 Identification of the parts**A** Small intestine/duodenum/jejunum/ileum ✓ (1)**C** Rectum/colon ✓ (1)**D** Cloaca/vent ✓ (1)**2.2 Micro-organisms in the reticulo-rumen****2.2.1 TWO examples of micro-organisms found in the reticulo-rumen**

- Bacteria ✓
 - Protozoa ✓
 - Fungi ✓
 - Archaea ✓
 - Viruses ✓
- (Any 2) (2)

2.2.2 TWO requirements for the normal functioning of micro-organisms

- Anaerobic conditions ✓
 - The presence of carbon dioxide ✓
 - A pH of 5,5 - 6,5/slightly acidic ✓
 - A temperature of 38 - 42 °C/warm environment ✓
 - Regular intake of feed ✓
 - Removal of the waste products ✓
 - Osmotic conditions/presence of moisture ✓
 - The presence of volatile fatty acids ✓
 - The presence of sufficient nutrients ✓
- (Any 2) (2)

2.3 The schematic representation of the types of feed**2.3.1 Identification of the types of feed**

- A** Concentrates ✓ (1)
B Roughages ✓ (1)

2.3.2 Identification of letter

- (a)** Succulent feed - C ✓ (1)
(b) Maize meal - D ✓ (1)
(c) Increases the bulkiness of the ration - B/C ✓ (1)

2.4 Digestibility co-efficient**2.4.1 Calculation of the digestibility co-efficient of the hay**

$$\text{DMI (kg)} = \frac{90}{100} \times 18 \text{ kg} = 16,2 \text{ kg} \checkmark$$

$$\text{DC} = \frac{\text{Dry matter intake (kg)} - \text{dry mass of manure (kg)}}{\text{Dry matter intake (kg)}} \times 100 \checkmark$$

$$= \frac{16,2 \text{ kg} - 5 \text{ kg}}{16,2 \text{ kg}} \times 100 \checkmark$$

$$= 69,1 \checkmark \% \checkmark \quad (5)$$

2.4.2 Implication

- 69,1% ✓ of the feed was digested and absorbed ✓
- 30,9% ✓ was excreted ✓
- Highly ✓ digested and absorbed ✓ (Any 1) (2)

2.5 Re-arrangement of the sources of protein

- Eggs ✓ (1)
- Milk ✓ (1)
- Lucerne ✓ (1)

2.6 Nutritive Ratio**2.6.1 Definition of the nutritive ratio**

NR is the ratio between the digestible protein ✓ and digestible non-nitrogen compounds in a ration or a feed ✓ (2)

2.6.2 Calculation of the nutritive ratio

$$\text{NR} = 1 : \frac{\% \text{TDN} - \% \text{DP}}{\% \text{DP}} \checkmark$$

$$= 1 : \frac{79\% - 7\%}{7\%} \checkmark$$

$$\text{NR} = 1:10 \checkmark$$

OR

$$\text{NR} = 1 : \frac{\% \text{digestible non-nitrogen nutrients}}{\% \text{Digestible protein}} \checkmark$$

$$= 1 : \frac{72\%}{7\%} \checkmark$$

$$\text{NR} = 1:10 \checkmark$$

(3)

2.7 Fodder flow**2.7.1 Identification of month with lowest feed available**July \checkmark

(1)

2.7.2 REASON to support the decline in quantitiesAdverse environmental conditions \checkmark

(1)

2.7.3 Calculation of the total feed required from January - June

- 50+50+60+60+70+60 tons \checkmark
- 350 tons \checkmark

(2)

2.7.4 The trend of feed available from August - DecemberThere is an increase in the feed available from August - December \checkmark

(1)

[35]

QUESTION 3: ANIMAL PRODUCTION**3.1 Farming and production systems****3.1.1 Identification of farming and production systems**

- (a) **Farming system** - Subsistence ✓ (1)
 (b) **Production system** - Extensive ✓ (1)

3.1.2 Justification for extensive production system

- The animals search food for themselves ✓
- There are few animals in large area of land ✓ (Any 1) (1)

3.1.3 Differentiate between subsistence and commercial farming

Subsistence farming - Practiced mainly to sustain the family/less impact to the environment/capital input/labour/technology ✓ (1)

Commercial farming - Practiced mainly for selling/generate profit/more impact to the environment/capital input/labour/technology ✓ (1)

3.1.4 TWO factors to increase animal production

- Nutrition/Feeding ✓
- Breeding/reproduction ✓
- General management ✓
- Environment ✓ (Any 2) (2)

3.2 The equipment used in different intensive production systems**3.2.1 Identification of the equipment**

- A** Nipple drinkers ✓ (1)
B Feeding trough/feeder ✓ (1)
C Infra-red light ✓ (1)

3.2.2 TWO reasons for keeping chickens in a shelter

- Protection against extreme weather conditions ✓
- Protection from predators/theft ✓
- For easy management/handling/control ✓
- Optimum production ✓
- Upholding biosecurity ✓ (Any 2) (2)

3.3 Animal handling

3.3.1 Reasons for handling cattle

- A Dehorning ✓ (1)
B Milking ✓ (1)

3.3.2 TWO basic guidelines for handling cattle

- Announce your approach through a touch to the animals ✓
- Avoid the fight zone ✓
- Use proper handling facilities ✓
- Always leave yourselves a way to get out ✓
- Never prod animals if there is no way to go ✓
- Give them time to adjust before working with them/
move animals slowly at their own pace ✓
- Avoid entering a small area enclosed with animals ✓
- Avoid shouting ✓
- Avoid whipping/throwing objects at animals ✓
- Work with calves in an area isolated from their mothers ✓
- People handling farm animals should be well trained/skilled/
knowledgeable ✓ (Any 2) (2)

3.3.3 TWO effects of incorrect handling of farm animals

- Farm animals become more difficult to handle ✓
- Bruises/decrease in quality of products ✓
- Decrease in production/farm animals may die ✓
- Drop in conception rate during AI ✓
- Aggressive/danger to handlers/other animals ✓ (Any 2) (2)

3.4 Animal diseases

3.4.1 Completing the missing information

- A Ringworm ✓ (1)
B Protozoa ✓ (1)
C Mastitis ✓ (1)
D Virus ✓ (1)
E
 - Aggression/excitement/frequent barking/biting everything ✓
 - Froth in the mouth/excessive salivation/drooling ✓
 - Running around/circling ✓
 - Paralysis of lower jaw and tongue/incoordination ✓
 - Seizures and death ✓ (Any 1) (1)

3.4.2 TWO economic implications of contagious animal diseases

- Banning of exports and imports/decrease in international trade ✓
- Decreased production/death ✓
- High treatment/vaccination costs to control/prevent diseases ✓
- Loss of income/profit ✓ (Any 2) (2)

3.5 Life cycle of a parasite**3.5.1 Classification of the parasite**

Internal/endo parasite ✓

(1)

3.5.2 Identification of two hosts

• Sheep ✓

(1)

• Snail ✓

(1)

3.5.3 TWO pasture management practices to control the parasite

• Rotational grazing

• Resting the infested pasture ✓

• Avoiding grazing wet areas ✓

• Allow resistant species to graze on the pasture ✓

• Practice zero grazing ✓

• Grazing on clean pastures ✓

• Veld burning/eradication of snails ✓

(Any 2)

(2)

3.6 External parasites**3.6.1 Identification of parasites****PARASITE A** - Nasal worm ✓

(1)

PARASITE B - Mites ✓

(1)

3.6.2 ONE symptom of nasal worm

• Sneezing and nasal irritation ✓

• Shaking of head to get rid of the parasite ✓

• Severe thick yellow nasal discharge ✓

• Respiratory distress/difficulty breathing ✓

(Any 1)

(1)

3.6.3 TWO ways to prevent blowfly strike

• Correct timing of shearing ✓

• Clipping of soiled wool/crutching ✓

• Cleaning/treatment of wounds ✓

• Tail docking ✓

• Lambing time after shearing ✓

• Breeding and selection of resistant animals ✓

• Waste management/hygiene/sanitation ✓

(Any 2)

(2)

[35]

QUESTION 4: ANIMAL REPRODUCTION**4.1 Male and female reproductive organs of cattle**

- 4.1.1 C ✓ (1)
- 4.1.2 D ✓ (1)
- 4.1.3 A ✓ (1)
- 4.1.4 E ✓ (1)

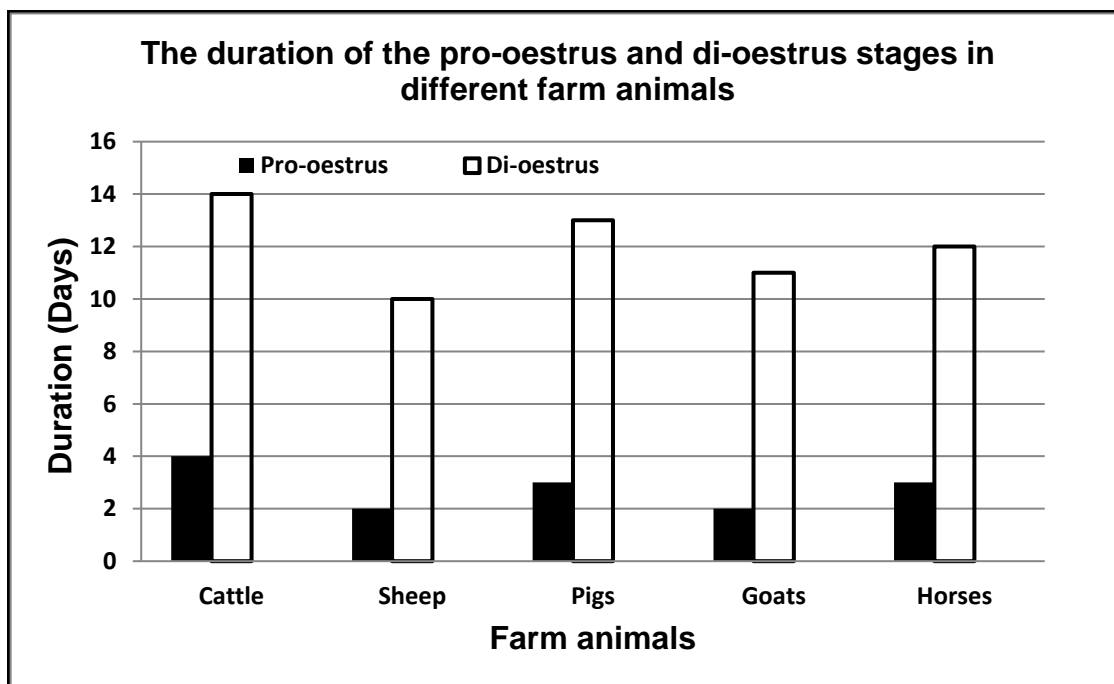
4.2 Name of the hormones

- 4.2.1 Follicle stimulating hormone/FSH ✓ (1)
- 4.2.2 Oestrogen ✓ (1)
- 4.2.3 Progesterone ✓ (1)
- 4.2.4 Follicle stimulating hormone/FSH ✓ (1)

4.3 Sterility and infertility in farm animals

- 4.3.1 **Name of the conditions leading to sterility in farm animals**
Underdeveloped testis or ovaries - Hypoplasia ✓ (1)
- 4.3.2 **Testis stay attached to the body cavity and do not move down to the scrotum - Cryptorchidism ✓** (1)

4.4 **Combined bar graph representing the duration of the pro-oestrus and di-oestrus stages in different farm animals**



CRITERIA/RUBRIC/MARKING GUIDELINES

- Correct heading ✓
- X-axis: Correct calibration and labelled (Farm animals) ✓
- Y-axis: Correct calibration and labelled (Duration) ✓
- Correct units (days) ✓
- Combined bar graph ✓
- Accuracy (80%+ correctly plotted) ✓

(6)

4.5 **Synchronization of oestrus**

4.5.1 **Name of the process**

Synchronization of oestrus ✓

(1)

4.5.2 **TWO methods used when performing oestrus synchronization**

- Injection of prostaglandin ✓
- Injection of synthetic progesterone ✓
- Injection of CoSynch oestrus synchronization/GnRH ✓
- MGA/PG mixed into the feed ✓
- Vaginal insertion of hormones/CIDR ✓
- Ear implantations of progesterone ✓

(Any 2) (2)

4.5.3 TWO disadvantages of the synchronization of oestrus

- Labour intensive ✓
 - Involves skilled management ✓
 - Expensive/high technology ✓
 - Requires regular pregnancy testing ✓
 - Needs good handling facilities ✓
 - Poor body conditions/nutrition/health will affect the process negatively ✓
- (Any 2) (2)

4.6 Artificial insemination**4.6.1 Identification of the reproductive technique**

Artificial insemination/AI ✓ (1)

4.6.2 TWO methods of collecting semen

- Use of an artificial vagina ✓
 - Use of an electro-ejaculator/electrical stimulation ✓
- (2)

4.6.3 ONE advantage of AI

- Semen of pure-bred proven/tested bulls can be used ✓
 - Decreases the exchange of sexually transmitted diseases ✓
 - Quick and economical way to improve the herd ✓
 - Semen from bulls from other countries can be used ✓
 - Improves the commercial value of the herd ✓
 - Semen of one bull can be used to AI many cows ✓
 - Semen of superior bulls with desired characteristics can be used long after death/no need to buy/maintain an expensive bull ✓
- (Any 1) (1)

4.7 Multiple births**4.7.1 Identification of the twins**

DIAGRAM A - Dizygotic/fraternal/non-identical twins ✓ (1)

DIAGRAM C - Monozygotic/identical twins ✓ (1)

4.7.2 Diagram representing the twins

(a) Of the same sex - Diagram C ✓ (1)

(b) Physical appearance differ - Diagram A ✓ (1)

4.7.3 The term for the female foetus

Freemartin ✓ (1)

4.7.4 The condition of the animal defect

Sterility ✓ (1)

4.8 Stages of parturition**4.8.1 Identification of stages****Diagram A** - Ejection of the foetus ✓

(1)

Diagram B - Preparatory stage ✓

(1)

4.8.2 Indication of the stage of parturition

Ejection/expulsion of the placenta ✓

(1)

4.8.3 ONE behavioural sign displayed by a cow approaching parturition

- Cow isolates itself from the herd ✓
- It stops eating ✓
- Cow shows signs of distress and discomfort ✓
- Restlessness, moves in circles, bites or kicks her flank/
walks around ✓
- Makes bellowing noises ✓
- Urinates and defecates often ✓
- Frequent tail raising ✓

(Any 1)

(1)

[35]**TOTAL SECTION B: 105****GRAND TOTAL: 150**