Education and Sports Development

Department of Education and Sports Development
Department van Onderwys en Sport Ontwikkeling
Lefapha la Thuto le Tlhabololo ya Metshameko
NORTH WEST PROVINCE

PROVINCIAL ASSESSMENT

GRADE 12

AGRICULTURAL SCIENCES MARKING GUIDELINE
JUNE 2017

MARKS: 150

This marking guideline consists of 10 pages.

QUESTION 1

1.1

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

1.2

1.2.1 B Only √√
1.2.2 A Only √√
1.2.3 Both A and B √√
1.2.4 A Only √√
1.2.5 A Only √√ **(5 X 2 = 10)**

1.3

1.3.1 Salivary amylase/ ptyalin √√
1.3.2 Pica √√
1.3.3 Commercial farmer √√
1.3.4 Ejaculation√√
1.3.5 Chronic diseases √√ **(5 X 2 = 10)**

1.4

1.4.1 Cardiac sphincter √
1.4.2 A, D, E & K √
1.4.3 Fodder flow program√
1.4.4 Endometrium√
1.4.5 Dystocia√ **(5 X 1 = 5)**

SECTION A TOTAL: 45 MARKS

SECTION B

QUESTION 2

- 2.1.1 A➔ Omasum √

  B➔ Rumen √

  D➔ Abomasum √

  E➔Reticulum √

(4)

2.1.2 **Rumination In Process A & C**

- In C (Rumen) food is mixed with the micro-organisms the forced back into the mouth via the E (reticulum) by retro-peristalsis √
- In A (omasum) the already regurgitated cud/food which is fine is ground, dried and sifted before being transferred into the abomasum √ (2)

2.1.3 **The Role Played By The Microbes In Parts C & E (Rumen & Reticulum)**

- The cellulytic bacteria √ secrete the enzyme cellulase √ which digests cellulose to the volatile fatty acids (Acetic, Butyric and Propionic acids) and the gases (CO_2, CH_4 & NH_3) √ (3)

2.1.4 Bloating √ (1)

[10]

2.2 **Nutritive Ratio**

2.2.1 **Feed A**

% TDN = 8 + 50 + 22 = 80% OR **%** NNN = 50 + 22 = 72%

NR = 1: $\frac{(\%TDN\ _\%DP\ )}{\%DP}$ √ OR 1: $\frac{(\%NNN\ )}{\%DP}$

= 1 : $\frac{(80\%\ _\ 8\%\ )}{8\%}$ √ **OR** 1 : $\frac{(\ 72\%\ )}{8\%}$

NR = 1: 9 √√ (4)

2.2.2 **Feed Suitable For Fattening**

Feed A √ (1)

Reason

- NR is wide (1 : 9) √
- Higher level of carbohydrates to proteins √
- As carbohydrates and fats are necessary for fattening √

Any 2 reasons (2)

2.2.3 **Feed Suitable For Young Growing Livestock**

Feed B √ (1)

Motivation

- NR is narrow (1: 5) √
- Higher level of proteins to carbohydrates √
- As proteins are necessary for growth √

Any 2 (2)

[6]

2.3 Fodder Flow Program

2.3.1 A $= \frac{700\ X\ 120}{1000}$ √

= 84 tons √

B $= \frac{240\ X\ 120}{1000}$ √

= 28.8 tons √ (4)

2.3.2 **Average Cost Of Feeding One Livestock Per Day**

- A cow $= \frac{10\ X\ R\ 1127}{1000}$

  = R 11.27 √

- A bull $= \frac{15\ X\ R\ 1127}{1000}$

  = R 16.91 √

- A bull $= \frac{4\ X\ R\ 1127}{1000}$

  = R 4.51 √ (3)

[7]

2.4 Mineral Elements Associated With the Mentioned Deficiency Symptoms

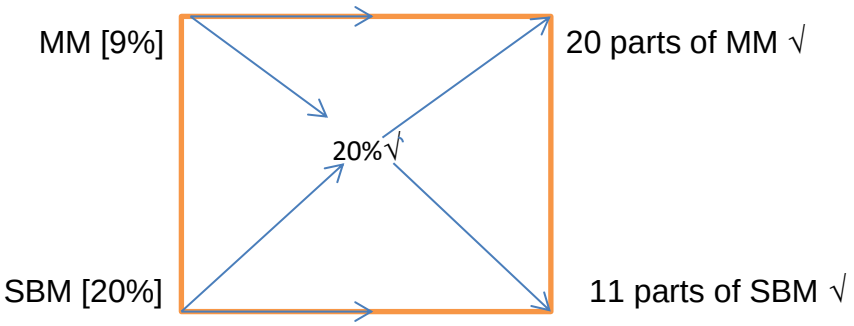
2.4.1 Iron/ Fe √ (1)

2.4.2 Iodine/ I √ (1)

2.4.3 Calcium/ Ca √ (1)

[3]

2.5 Feed formulation using the Pearson Square Method



Ratio = 20MM: 11SBM √= 20:11 √

OR

11SBM: 20MM √= 11:20 √ (5)

[5]

[35]

QUESTION 3

3.1 Broiler Production Unit

3.1.1

A ➔ Insulation material on the roof/ Foldable side wall √ (1)
B ➔ Electric heaters /Foldable side walls √ (1)
C ➔ Fans in the roof and walls/ Electric heaters √ (1)
D ➔ Foot baths at all entrances √ (1)

3.1.2 **Characteristics Of An Intensive Animal Production**

- Highly hygienic √
- Protection against extreme environmental condition/ shelter is provided√
- Optimal production temperature is regulated √
- Regular supply of feeds and water √
- Lots of animal kept in a small space/ Kept in high density √
- Capital and labour intensive √

Any 2 (2)

3.1.3 **The Possible Health Risks**

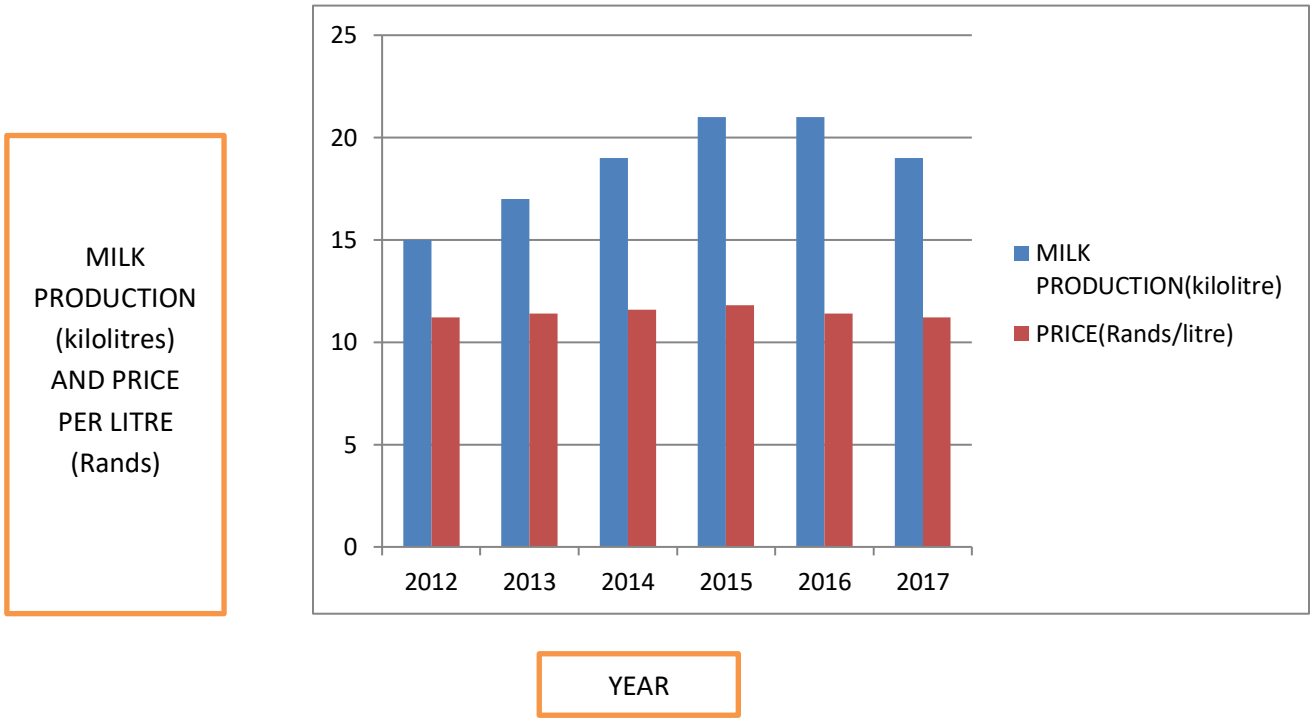
- Diseases√
- Outbreak of infectious diseases may spread rapidly amongst poultry √ (2)

[8]

3.2 The Future Of South African Dairy Industries

3.2.1

A Compound Bar Graph Comparing The Price Of Milk Production And The Price From 2011 To 2017



CHECKLIST

CRITERIA	MARKS
Correct Title √	1
Axes With Correct Variables √	1
Correct Bar Graphs √√	2
Correct Units Of The Variables √√	2
Total	6

3.2.2 Milk production increased from 2012 to 2015 √, then stabilized from 2015to 2016.√ (2)

3.2.3 **Factors That Might Cause Dairy Farmers To Quit The Dairy Industry**

- Drought √
- Low milk prices √
- Low profit margins verses increased production costs√

Any 2 (2)

3.3

3.3.1 Signs Of Aggression/Distress In Cattle

- Pinned/raised ears√
- Rapid tail movement√
- Raised hair/fur on the back of the neck√
- Pawning the ground√
- Snorting√
- Teeth grinding√
- Feigned charging movement√ Any3 (3)

3.3.2 **Factors Influencing Animal Behaviour**

- Tameness√
- Type√
- Breed√
- Age√
- Physiological state√
- Health status√
- Frequency of animal handling√
- Experience and calmness of the handler√
- Facilities and equipment used√ Any 2 (2)

3.3.3 **Tools Used For The Safe Handling Of Cattle**

- Halter√
- Strong rope√
- Crush√
- Chains√
- Strong pen√
- Head clamp√
- Nose pliers√
- Prodders√
- Whip√
- Strong truck√ Any 2 (2)

3.4 **Indigenous Methods Of Diseases And Pest Control**

3.4.1 **Indigenous control of method comparable to chemical control of diseases**

- Local concoctions/mixtures √ (1)

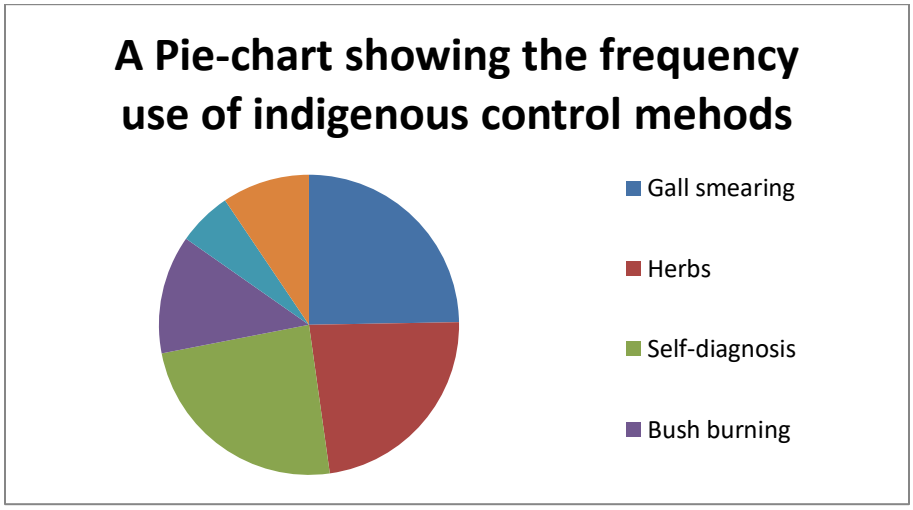
3.4.2 Gall smearing√ (1)

3.4.3 **Bush burning as a way of controlling tick infestations**

- Destroys the vegetation on which the eggs dropped by the female adult ticks √
- Kills the adult, eggs, larvae and may be the nymphs i.e. breaks the life cycle of the ticks √

Any 1 (1)

3.4.4 Pie-chart showing the frequency use of indigenous control methods



CHECKLIST

CRITERIA	SCORE
Title√	1
Pie-chart√	1
All methods indicated√	1
Correct Scale/Angle/Sector(Arc) √√√	3
TOTAL SCORE	6

(6)

3.4.5 **The Conventional Methods Farmers Should Adopt To Restrict Infectious Diseases**

- Isolation √
- Quarantine √

Any 1 (1)

[35]

QUESTION 4

4.1 Diagram Of A Bull's Reproductive System

4.1.1 A - Epididymis √
B - Testes √
C - Scrotum √
D - Vas deferens/ Sperm duct/ Spermatic cord √ (4)

4.1.2 Testosterone √ (1)

4.1.3 Enhances sexual desire /urge or libido √
Development of the secondary male characteristics √
Stimulation of spermatogenesis √
Any two (2)

4.1.4 Cryptorchidism √√ (2)

4.1.5 C (Scrotum) √ (1)

4.2 Draft Management Programmed For A Dairy Producer Who Synchronized The Dairy Production Enterprise

4.2.1 May √ and June √ (2)

4.2.2 Calving /parturition √√ (2)

4.2.3 **Effect On The Farmer If Cows Fail To Conceive In May / June**

- Cows will be drier √ for longer periods/ less milk is produced/ loss of income √
- Dry cows need to be fed without producing an income √ i.e. Maintenance costs √

(4)

4.3 Reproductive Organs And A Stage In The Reproduction Stage In Cattle

PROCESS	SITE WHERE IT OCCURS
(a) Embryo development	D (Uterus)√
(b) Fertilization	B (Fallopian tubes)√
(c) Ovulation	A (Ovary)√
(d) Follicle development	A (Ovary √

(4)

4.3.2 **Arrangement Of The Reproductive Processes In The Correct Sequence**

- Follicle development √
- Ovulation √
- Fertilization √ (3)

4.4 Phases Of Oestrus

4.4.1 A Pro-Oestrus √
B Oestrus √
C Met- Oestrus √
D Di- Oestrus √
(4)

4.4.2 B √√ (1)

4.4.3 1 Day (18 to 24 hours) √√ (1)

4.4.4

- Manipulate the sexual hormone by removing the corpus luteum √
- By injecting Oestrogen √
- By injecting FSH and LH √
- By injecting progesterone √ (4)

TOTAL SECTION B (105)

GRAND TOTAL (150)