



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

AGRICULTURAL SCIENCES P1

NOVEMBER 2017

MARKING GUIDELINES

MARKS: 150

These marking guidelines consist of 10 pages.

SECTION A**QUESTION 1**

1.1	1.1.1	C ✓✓	(10 x 2)	(20)
	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 ✓✓		
1.2	1.2.1	None ✓✓	(5 x 2)	(10)
	1.2.2	Both A and B ✓✓		
	1.2.3	A only ✓✓		
	1.2.4	B only ✓✓		
	1.2.5	A only ✓✓		
1.3	1.3.1	Popping/micronising/roasting ✓✓	(5 x 2)	(10)
	1.3.2	Homoeothermic/endothemic ✓✓		
	1.3.3	Superovulation ✓✓		
	1.3.4	Buffer ✓✓		
	1.3.5	Progesterone ✓✓		
1.4	1.4.1	Cardiac ✓	(5 x 1)	(5)
	1.4.2	Blue ✓		
	1.4.3	Hypoplasia ✓		
	1.4.4	Amnion ✓		
	1.4.5	Semen straw ✓		

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 ✓ (1)

2.1.2 Reason visible from the diagram

It has a simple/single/monogastric stomach ✓ (1)

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 ✓ (1)

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

$$100 \times 21\text{kg} \times 30 = 63\,000\text{kg} \checkmark$$

$$= \frac{63\,000\text{kg}}{1000} \checkmark$$

$$= 63 \text{ tons} \checkmark$$

OR

$$360\,000\text{kg} + 390\,000\text{kg} = \frac{750\,000\text{kg}}{12} \checkmark$$

$$= \frac{62\,500\text{kg}}{1000} \checkmark$$

$$= 62,5/63 \text{ tons} \checkmark$$

(3)

2.6 Feed components**2.6.1 Feed nutrient supplying most energy**Fats \checkmark

(1)

2.6.2 Units of measuring energyMega joule/MJ/kilojoule/kJ/Joule/J \checkmark

(1)

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

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

(Any 2) (2)

2.7 Minerals and vitamins**2.7.1 Completion of missing information****A** Zinc/Zn \checkmark

(1)

B Metritis/inflammation of the uterus \checkmark

(1)

C Stiff lamb/muscle dystrophy/white muscle \checkmark

(1)

2.7.2 Methods of supplementing nutrients(a) Injections/supplementary ration \checkmark (b) Dissolve them in drinking water/dosing \checkmark

(2)

[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 \checkmark

(1)

3.1.2 Reason for the answer in QUESTION 3.1.1

- 100 sheep are kept on a small area \checkmark

OR

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

(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

$$25 + 100 + 30 + 10 = 165 \checkmark$$

$$= \frac{100 \times 100}{165} \checkmark$$

$$= 60,61\% \checkmark \quad (3)$$

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 ✓

Days	Weight gain ✓ (g) ✓
0	0
4	400
8	400
12	1 200
16	1 200
20	1 200
24	1 800
28	1 800
32	1 800
36	1 000
40	0

Criteria/rubric/marketing 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/lersions ✓
- 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)

[35]**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 - Di oestrus ✓

(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 ✓ (1)
B - Pistolette ✓ (1)
C - Nitrogen flask/canister/tank ✓ (1)

4.4.2 Function of each apparatus

- A** - Collection of semen ✓ (1)
B - For the deposition of semen in the cow during AI ✓ (1)
C - Storage of semen for longer periods ✓ (1)

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 ✓ (Any 2) (2)

4.5 Synchronisation schedule of female animals**4.5.1 Identification of the process**

- Synchronisation of oestrus ✓ (1)

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 ✓ (Any 2) (2)

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 ✓ (Any 2) (2)

4.5.4 Indication of the time (day) when the cows will be inseminated

- Day 35 – 40 ✓ (1)

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

