



# basic education

Department:  
Basic Education  
**REPUBLIC OF SOUTH AFRICA**

## **NATIONAL SENIOR CERTIFICATE**

**GRADE 12**

**AGRICULTURAL SCIENCES P1**

**NOVEMBER 2010**

**MEMORANDUM**

**MARKS: 150**

**This memorandum consists of 10 pages.**

**SECTION A****QUESTION 1.1**

1.1.1	<b>A</b>	<b>X</b> ✓✓	<b>C</b>	<b>D</b>
1.1.2	<b>A</b>	<b>B</b>	<b>X</b> ✓✓	<b>D</b>
1.1.3	<b>A</b>	<b>B</b>	<b>C</b>	<b>X</b> ✓✓
1.1.4	<b>X</b> ✓✓	<b>B</b>	<b>C</b>	<b>D</b>
1.1.5	<b>A</b>	<b>B</b>	<b>X</b> ✓✓	<b>D</b>
1.1.6	<b>A</b>	<b>X</b> ✓✓	<b>C</b>	<b>D</b>
1.1.7	<b>A</b>	<b>B</b>	<b>C</b>	<b>X</b> ✓✓
1.1.8	<b>A</b>	<b>B</b>	<b>C</b>	<b>X</b> ✓✓
1.1.9	<b>A</b>	<b>B</b>	<b>X</b> ✓✓	<b>D</b>
1.1.10	<b>A</b>	<b>B</b>	<b>X</b> ✓✓	<b>D</b>

(10 x 2) (20)

**QUESTION 1.2**

1.2.1	<b>C</b> ✓✓
1.2.2	<b>A</b> ✓✓
1.2.3	<b>A</b> ✓✓
1.2.4	<b>A / D</b> ✓✓
1.2.5	<b>B</b> ✓✓

(5 x 2) (10)

**QUESTION 1.3**

1.3.1 Cloaca / Vent ✓✓

1.3.2 Net / Net energy ✓✓

1.3.3 Feedlot / Intensive production /  
Precision farming ✓✓

1.3.4 Virus ✓✓

1.3.5 Blowfly ✓✓

(5 x 2) (10)

**QUESTION 1.4**

1.4.1 Active / Non-passive ✓

1.4.2 Optimum / Suitable / Best / Ideal /  
Favourable / Conducive ✓

1.4.3 Foot bath / Step dip / Foot dip ✓

1.4.4 Dehorning iron / Dehorning spoon /  
Dehorner / Dehorning paste ✓

1.4.5 Docking / Removal of tail / Crouching ✓

(5 x 1) (5)

**TOTAL SECTION A: 45**

**SECTION B****QUESTION 2: ANIMAL NUTRITION****2.1 Diagrams of the alimentary canals of farm animals**

- 2.1.1 Four different compartments visible in stomach area / complex stomach ✓  
Has a large compartment in stomach area / fermentation vessel / rumen ✓  
Very long small intestine ✓  
Very large / enlarged caecum ✓ (Any 2) (2)
- 2.1.2 Diagram 1 ✓ (1)
- 2.1.3 Protozoa ✓  
Bacteria ✓ (2)
- 2.1.4 Anaerobic environment / oxygen-free environment ✓  
Warm environment ✓  
Wet environment ✓  
Suitable pH value ✓  
Sufficient nutrients / regular intake of feed ✓  
Easily digestible carbohydrates ✓  
Sufficient mineral nutrients ✓  
Sufficient nitrogen ✓  
Mechanism for removal of waste products / excretion ✓ (Any 2) (2)
- 2.1.5 Changes in the composition of the micro-organisms ✓  
Changes in the type of fatty acids that are formed ✓  
Changes in the quantity and type of gasses which are formed ✓  
Changes in pH of the stomach content ✓  
Changes in the rate of digestion ✓ (Any 3) (3)

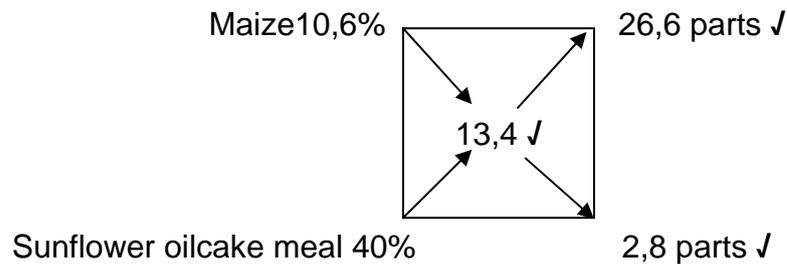
**2.2 The diagram of the sow and the litter of piglets**

- 2.2.1 The trace element that is deficient in the pen with concrete floor  
• Iron/Fe ✓ (1)
- 2.2.2 Metabolic disease associated with iron/Fe deficiency  
• Anaemia ✓ (1)
- 2.2.3 Cheapest and easiest method of supplementing Iron /Fe.  
• Soil sods/dosing/injecting ✓ (1)



**2.4 Square method to determine the mixture in the ration**

2.4.1



Ratio: Maize : Sunflower oilcake meal = 26,6 : 2,8 ✓

**OR**

Mix 26,6 parts of maize with 2,8 parts of sunflower oilcake meal ✓ (4)

2.4.2

Lactating ewes ✓

(1)

**[35]****QUESTION 3: ANIMAL PRODUCTION****3.1 Handling facility for goats**

- 3.1.1 To utilise the available grazing more effectively/rotational grazing ✓  
Other crop damage/damage to vegetables/damage to orchard ✓  
Security reasons/keep animals close to homestead ✓ (Any 2) (2)
- 3.1.2 **DIAGRAM A:**  
Grazing areas not utilised effectively/circular grazing area ✓  
Animals have a smaller area to move in ✓ (Any 1)
- DIAGRAM B:**  
Grazing area utilised more effectively/square grazing area ✓  
Animals have a larger area to move in ✓ (Any 1) (2)
- 3.1.3 Fences/herd boy/temporary fencing/trained dogs ✓ (1)

**3.2 Handling facility for beef cattle**

- 3.2.1 Factors to consider when building a handling facility
- Site / Space / Type of surface ✓
  - Location / Slope ✓
  - Design / Farming system ✓
  - Materials ✓
  - Layout ✓
  - Size of the herd ✓
  - Breed of animal ✓
  - Affordability / Economic implication ✓
  - Safety ✓
  - Availability of labour ✓ (Any 2) (2)
- 3.2.2 TWO reasons that would indicate the importance of having a crush in a handling facility:
- To ensure safety (handlers and animals) while working with large animals ✓
  - To be able to work with animals while they are static/stable ✓
  - To perform specialised practices on animals (AI, dehorning, castration, tattooing, branding, apply medication, physical examinations, treatments) ✓
  - Time and labour efficient ✓
  - Normally connected to a loading facility to load animal easier ✓ (Any 2) (2)
- 3.2.3 Basic principles in handling cattle:
- Keep safety as the main principle in your mind ✓
  - Cattle are nervous by nature therefore they should be kept as calm as possible ✓
  - Use the correct handling equipment (e.g. protter) ✓
  - Stay aware of animals' nature / instinct / sight ✓
  - No carrying of stick or throwing of stones ✓
  - No shouting, whistling or wild gesticulations ✓
  - Move around slowly and no running around ✓
  - Keep animals of the same size / age together ✓
  - Animals in crush must face the same direction ✓
  - Separate sick / old / pregnant animals from healthy animals ✓
  - Limit the number of people in a facility ✓ (Any 4) (4)
- 3.2.4 Impact of not following basic principles:
- Injuries to animals (stampede) ✓
  - Injuries to handlers (fatal) ✓
  - Damage to property ✓
  - Lower quality of carcass/poor meat quality ✓
  - Lactating animals will have lower production ✓
  - Miscarriages or abortions in pregnant animals ✓
  - Animals run away / Wild behaviour / Stress ✓ (Any 2) (2)

**3.3 Production Systems**

- 3.3.1 A: Extensive ✓ (1)  
B: Intensive ✓ (1)

**3.3.2 Differences between the production systems**

<b>A: Extensive</b>	<b>B: Intensive</b>
<ul style="list-style-type: none"> <li>• Depend mainly on natural resources / not fed with well formulated feed ✓</li> <li>• Not many capital inputs/not capital intensive ✓</li> <li>• Normally on a large piece of land ✓</li> <li>• Not labour intensive/few labourers ✓</li> </ul>	<ul style="list-style-type: none"> <li>• Animals are well taken care, carefully bred and closely supervised (optimal inputs and outputs)/technologically advanced systems utilised / well formulated feed ✓</li> <li>• Capital intensive / expensive infrastructure ✓</li> <li>• Relatively small area is utilised ✓</li> <li>• Very labour intensive ✓</li> </ul>

(Any 2) (Any 2) (4)

**3.3.3 Recommendation of a farming system**

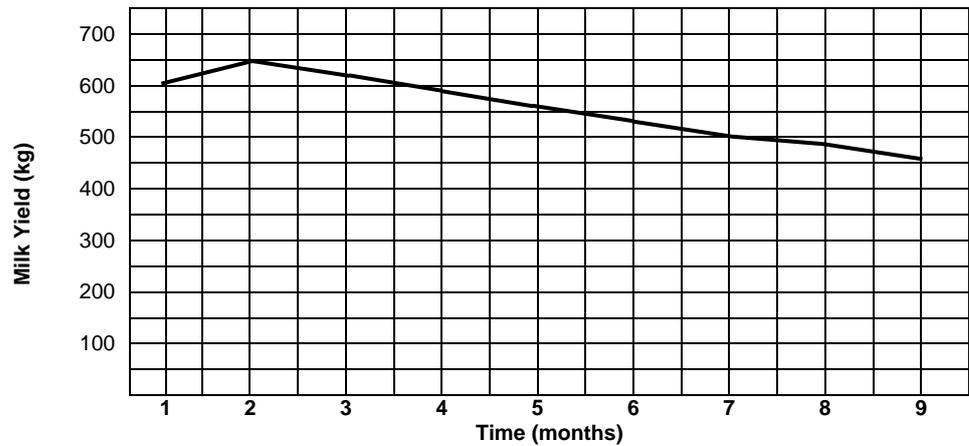
A / sheep / cattle / game / goat farming in dry area / Pasture production ✓

This farming enterprise is dependant on unpredictable climatic/ environmental conditions ✓ (2)

**3.4 Fodder flow programme**

- 3.4.1 D ✓ (1)  
3.4.2 B ✓ (1)  
3.4.3 C ✓ (1)  
3.4.4 A ✓ (1)

3.5 3.5.1 **Heading: The average milk yield measured against time (9 months)**



**Checklist to mark:**

ITEM/CRITERIA	EVIDENCE/ NO 0 MARK	EVIDENCE/ YES 1 MARK
Heading		✓
Axes labelled (both)		✓
Units appear (both axes)		✓
Correct values		✓
TOTAL:		4

(4)

3.5.2 Scale ✓

(1)

3.5.3  $(600 + 650 + 620 + 590 + 560 + 530 + 500 + 480 + 460)/9$  ✓  
 $= 4990/9$  ✓  
 $= 554,4$  kg/cow/month ✓

(3)

[35]

**QUESTION 4: ANIMAL REPRODUCTION, PROTECTION AND CONTROL**

**4.1 The process or events that take place during reproduction**

4.1.1 Fertilisation / fusion of gametes ✓

(1)

4.1.2 A – Sperm cell/spermatozoon/male reproductive cell/gamete/seed ✓

B – Ovum/egg cell/female reproductive cell/gamete/ooid ✓

C – Zygote/blastocyst/Zona Pellucida ✓

D – Foetus/embryo/new individual/identical twins/monozygotic twins ✓

(4)

4.1.3 Identical twins/Monozygotic twins ✓

(1)

**4.2 Diagrams of sperm cells**

- 4.2.1 Middle piece/mid piece/body/neck ✓ (1)
- 4.2.2 A/B/C/E ✓ (1)
- 4.2.3 (a) tail/flagellum ✓ (1)  
(b) head/nucleus ✓ (1)
- 4.2.4 Testis / primary sex organ ✓ (1)

**4.3 Graph of the reproductive aspects of dairy cow**

- 4.3.1 Milk production (Lactation) starts / Colostrum is formed ✓  
Milk production increases to peak production ✓  
Animal needs to be well fed/Feed consumption increases ✓  
Recovery of reproductive organs and glands / oestrus starts again ✓  
Metabolic state of animal changes ✓ (Any 3) (3)
- 4.3.2 Month 2 or 3 ✓ (1)
- 4.3.3 Month 10 / 11 and ✓  
Month 12 ✓  
**or**  
During the last two months (7 / 8 and 9) of pregnancy ✓✓ (2)
- 4.3.4 (a) 9 months ✓  
(b) 9 / 10 months ✓  
(c) 2 / 3 months ✓ (3)
- 4.3.5 4 kg – 4,5 kg ✓ (1)

**4.4 Bacterial diseases**

- Vibriosis ✓  
Botulism ✓  
Brucellosis/Contagious abortion ✓  
Mastitis ✓  
Tetanus ✓  
Paratyphoid ✓  
Anthrax ✓  
Calf diphtheria ✓  
White scours ✓  
Tuberculosis ✓  
Pulpy kidney ✓  
Black quarter / Black evil ✓  
Pasteurellosis ✓  
Cheesy gland ✓ (Any 4) (4)

**4.5 Internal parasite pressure**

- 4.5.1 Spring ✓ (1)
- 4.5.2 Poor herd management/conditions are suitable for multiplication of parasites ✓  
Environmental conditions are more favourable for the breeding of pests ✓ (Any 1) (1)
- 4.5.3 **Good herd management practices**
- Good nutrition ✓
  - Health programme/chemical control/biological control ✓
  - Avoiding wet places ✓
  - Rotational grazing ✓ (Any 2) (2)
- 4.5.4 **Diagnosing parasite infections**
- Faecal egg count ✓
  - Post mortem examination/Autopsy ✓
  - Inspection/observation of animals ✓
  - Blood tests ✓ (Any 1) (1)
- 4.5.5 **THREE economic importance/effects of internal parasites**
- Stock losses ✓
  - Loss of production/reproduction/illness ✓
  - Degrading of carcasses ✓
  - Danger to human health/other animals health ✓
  - Increased production cost / loss of income ✓ (Any 3) (3)
- 4.5.6 **TWO biological control measures of internal parasites**
- Keep animals in good condition ✓
  - Rotational grazing ✓
  - Avoiding wet places ✓
  - Avoid keeping animals in infested pens / Good hygienic practices ✓
  - Creating an environment for natural enemies ✓
  - Release fungus tea / Natural organic herbs ✓
  - Using / Selecting / Breeding more resistant animals ✓
  - Burning of veld or pasture fields ✓
  - Sterilisation of pests / Gene modification ✓ (Any 2) (2)

**[35]**

**TOTAL SECTION B: 105**  
**GRAND TOTAL: 150**