basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

AGRICULTURAL SCIENCES P1

FEBRUARY/MARCH 2014

MEMORANDUM

MARKS: 150

This memorandum consists of 9 pages.

SECTION A

QUESTION 1

1.1	1.1.1	B ✓✓		
	1.1.2	C ✓✓		
	1.1.3	B ✓✓		
	1.1.4	C ✓✓		
	1.1.5	D ✓✓		
	1.1.6	B ✓✓		
	1.1.7	C ✓✓		
	1.1.8	A ✓✓		
	1.1.9	C ✓✓		
	1.1.10	C ✓✓	(10 x 2)	(20)
1.2	1.2.1	B only ✓✓		
	1.2.2	A only ✓✓		
	1.2.3	A only ✓✓		
	1.2.4	A only ✓✓		
	1.2.5	Both A and B ✓✓	(5 x 2)	(10)
1.3	1.3.1	Iodine ✓✓		
	1.3.2	Net energy ✓✓		
	1.3.3	Feedlot ✓✓		
	1.3.4	Corpus luteum ✓✓		
	1.3.5	Mastitis ✓✓	(5 x 2)	(10)
1.4	1.4.1	Fats ✓		
	1.4.2	Free range ✓		
	1.4.3	Burdizzo ✓		
	1.4.4	Antibodies ✓		
	1.4.5	Scrotum ✓	(5 x 1)	(5)
			TOTAL SECTION A:	**45**

SECTION B

QUESTION 2: ANIMAL NUTRITION

2.1 The digestive systems of farm animals

2.1.1 Identify the labelled parts

A - Oesophagus/gullet ✓
B - reticulum ✓
I - duodenum/small intestine/ileum ✓ (3)

2.1.2 The function of part F

Moistening/softening/soaking of food material/ storage ✓ (1)

2.1.3 Comparing the functions of part C and F

Secretion of enzymes/digestive juices ✓ (1)

2.1.4 Age level/maturity

Fully grown/adult animal ✓ (1)

2.1.5 Identification and description the structure for the mechanical digestion of maize

- Ventriculus /muscular stomach/gizzard/H ✓ (1)

Description

- Has a muscular stomach ✓
- Which contains small stones ✓
- To grind the food ✓ (Any 1) (1)

2.2 Absorption of end products

2.2.1 Absorption process

Active absorption ✓ (1)

2.2.2 Working process of carrier molecules

- Carrier molecule attaches itself to the ion of the mineral element ✓
- Carrier molecule uses energy to transport substances across the
- membrane ✓
- Ensures the movement of substances against the concentration gradient ✓ (Any 2) (2)

2.3 Mineral and vitamin deficiencies

2.3.1 Vitamin A/retinol ✓ (1)

2.3.2 Vitamin E ✓ (1)

2.3.3 Iron/Fe ✓ (1)

2.4 Suitability of feeds for different feeding conditions

2.4.1 Yellow maize meal ✓ (1)

2.4.2 Salt ✓ (1)

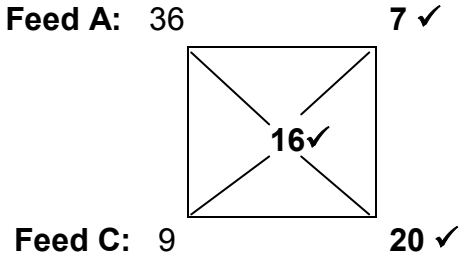
2.4.3 Urea ✓ (1)

2.4.4 Fish meal ✓ (1)

2.4.5 Lucerne ✓ (1)

2.5 Balancing of rations

2.5.1 Pearson square method



Mix 7 parts of feed A with 20 parts of feed C **or** 7 : 20 ✓ (4)

2.5.2 The cost of Mixtures: Feed AC and Feed BD

(a) Feed A and Feed C:
7 parts A to 20 parts C
7 x R2,90 + 20 x R1,10 ✓
R20,30+ R22,00 =R42,30 ✓ (2)

(b) Feed B and Feed D:
4 parts B to 26 parts D
4 x R3,50+ 26 x R1,40✓
R14,00+ R36,40= R50,40✓ (2)

2.5.3 Cheapest mixture and reason

- Mixture of Feed A and Feed C/Ration AC ✓ (1)

Reason

- The costs is R42,30 ✓
- Whereas the mixture of Feed B and Feed D is R50,40 ✓ (Any 1) (1)

2.6 **NR/Nutritive ratio**

2.6.1 NR = 1 : $\frac{62\% - 25\% \checkmark}{25\% \checkmark}$

NR = 1 : 1,48 **or** 1 : 1,5 ✓ (3)

2.6.2 **Type of nutritive ratio**
Narrow/protein rich✓ (1)

2.6.3 **Suitability of Lucerne**
- Not suitable for fattening ✓
- Lucerne hay has a narrow NR, meaning does not have enough carbohydrate/energy needed for fattening ✓ (2)

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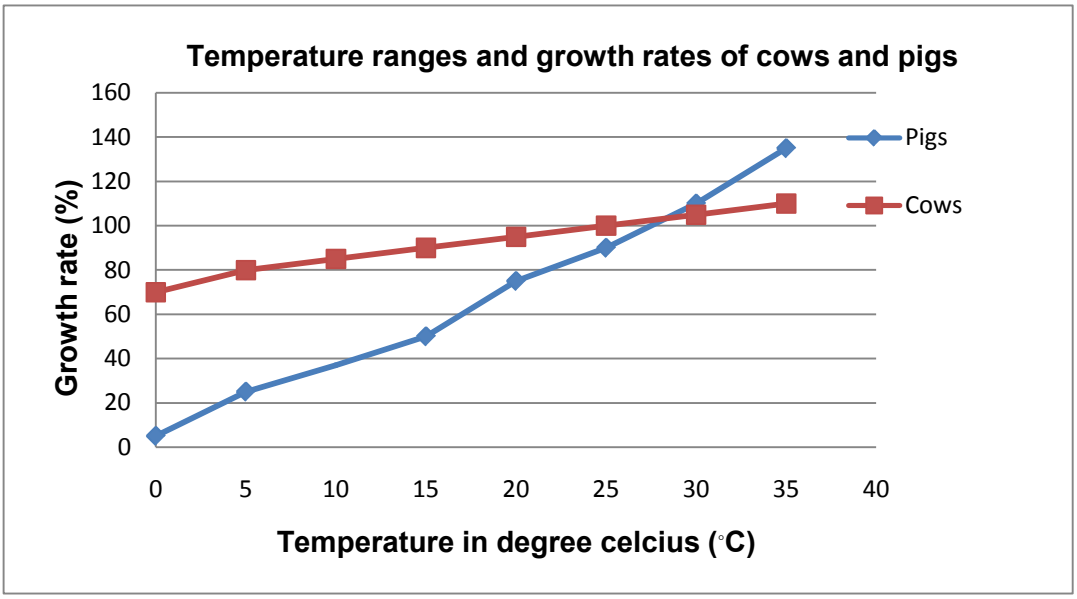
QUESTION 3: ANIMAL PRODUCTION

3.1 **Temperature ranges**

3.1.1 **Graph on Temperature ranges and growth rates of cows and pigs**



Checklist/rubric for marking the graph:

Criteria	Yes:1 Mark	No: 0 Mark
1 Line graph	1 ✓	
2 X-axis correctly labelled	1 ✓	
3 Y-axis correctly labelled	1 ✓	
4 Plotting growth rate for pigs	1 ✓	
5 Plotting growth rate for cows	1 ✓	
6 Correct heading	1 ✓	

(6)

3.1.2 **TWO methods to protect pigs against extreme cold weather**
- Shed for sheltering ✓
- Bedding in a pen ✓
- Provide insulation material ✓
- Insert heaters in a pen ✓ (Any 2) (2)

3.1.3 **Reasons why cows grow better at low temperature**
- The presence of papilla in the rumen ✓
- Act as heating rods ✓
- To keep the temperature constant ✓
- Cows have less radiation relative to their size ✓ (Any 3) (3)

3.2 **Sizwe chicken enterprise**

3.2.1 **A reason for broilers not growing**
They were fed leftovers, poor in proteins which are needed for growth ✓ (1)

3.2.2 **Correcting the identified problem**
- The farmer should provide supplements ✓
- Feed protein rich concentrates✓
- Add growth stimulants ✓ (Any 2) (2)

3.2.3 **Farming system**
- Extensive ✓ (1)

Reason
- Farmer considers starting a feedlot to increase production ✓
- More influenced by environmental factors✓
- The farmer is farming extensively with cattle✓ (Any 2) (2)

3.2.4 **TWO environmental factors**
- Very cold winters ✓
- Hot summers ✓ (2)

3.2.5 **THREE management aspects to increase production in a feedlot**
- Feeding programme✓
- Better control of parasites and diseases ✓
- Animals better protected from extreme environmental conditions for improved production ✓ (3)

3.3 **Farrowing pen**

3.3.1 **TWO items that contribute to the cost**
- Electricity/heat lamp ✓
- Water✓
- Feed ✓ (Any 2) (2)

3.3.2 **Necessities in the farrowing pen**
(a) To drain urine and faeces for hygienic purposes ✓ (1)
(b) Reduce waste of water ✓ (1)

3.3.3 **Justification of heat lamps**
- To ensure even temperature throughout the farrowing area ✓
- Create ideal temperature for optimal production/regulate body temperature of these homoeothermic farm animals ✓ (Any 1) (1)

3.4 **Production systems**

3.4.1 **Relationship between output and input**
- Positive relationship ✓
- The more inputs the more outputs ✓ (2)

3.4.2 **Large production enterprises**
- Have larger capital investment ✓
- More effective/efficient ✓
- Better marketing opportunities ✓ (Any 2) (2)

3.5 **Improper handing before slaughtering of farm animals**

3.5.1 **Description of physical effects of poor handling**
- Lower grading of the carcass due to poor handling of animals ✓
- Poor handling causes delayed rigor mortis in slaughtered animals✓
- Bruises on animals cause poor meat quality ✓
- Injuries may lead to animal deaths ✓ (Any 2) (2)

3.5.2 **Economic implications of poor handling**
- Production losses ✓
- Financial losses ✓
- Loss of markets ✓ (Any 2) (2)

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QUESTION 4: ANIMAL REPRODUCTION, PROTECTION AND CONTROL

4.1 Reproductive organs of the cow

4.1.1 Reproductive parts

A – uterine horn ✓
C – fallopian tube/oviduct ✓
E – cervix ✓
F – vagina ✓ (4)

4.1.2 Linking of parts

(a) F ✓
(b) C ✓
(c) I ✓
(d) J ✓ (4)

4.1.3 Role of caruncles

- Contain nodules ✓
- That provide for implantation of embryo ✓ (2)

4.2 Sequence of hormonal changes

4.2.1 Identify the labels

A - oestrogen ✓
B - progesterone ✓ (2)

4.2.2 Process and role of C

- Ovulation ✓ (1)

Role

- Release of ovum ✓ (1)

4.2.3 Visible signs of oestrus

- Cow lows often ✓
- It is restless ✓
- Arches its back from time to time ✓
- Swelling and reddening of vulva ✓
- Secretion of slimy mucus through the vulva ✓
- Mounts other cows ✓
- Allows mating ✓
- Scratch marks on the back✓
- Saliva/mud/soil/food particles on the back ✓ (Any 4) (4)

4.2.4 Functions of the hormones

(a) **FSH** - Stimulates the development/enlargement of the follicle ✓ (1)
(b) **LH** - Stimulates the bursting of the follicle ✓ (1)

4.3 Infectious reproductive diseases

4.3.1 Pathogens A and B
A - Protozoa ✓
B - Virus ✓ (2)

4.3.2 TWO diseases transmitted by bulls
- Trichomonias ✓
- Vibriosis ✓ (2)

4.3.3 Common system of all the mentioned diseases
Abortion ✓ (1)

4.3.4 Prevention of brucellosis in heifers
Vaccination ✓ (1)

4.3.5 Caution with handling unknown diseases
Diseases may be transmitted to people ✓ (1)

4.3.6 Reason for fatality of brucellosis
No cure ✓ (1)

4.4 Infestation of parasites

4.4.1 External parasite
Blowfly ✓ (1)

4.4.2 Environmental conditions favouring the parasite
- Wet conditions ✓
- Soiling below tails ✓
- Open wounds
- Availability of grass ✓ (Any 2) (2)

4.4.3 Economic implication
- Loss of production/ wool/ ✓
- Loss of animals ✓
- Loss of income ✓ (Any 2) (2)

4.4.4 Methods to control the attack
- Shearing crotches ✓
- Treatment of wounds ✓
- Docking of tails ✓ (Any 2) (2)

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TOTAL SECTION B: 105
GRAND TOTAL: 150