



Province of the
EASTERN CAPE
EDUCATION

Steve Vukile Tshwete Education Complex • Zone 6 Zwelitsha 5608 • Private Bag X0032 • Bhisho 5605
REPUBLIC OF SOUTH AFRICA

CHIEF DIRECTORATE – CURRICULUM MANAGEMENT

**GRADE 12 LEARNER SUPPORT
PROGRAMME**

**REVISION AND REMEDIAL TEACHING
INSTRUMENT:
QUESTIONS AND ANSWERS**

SUBJECT: AGRICULTURAL SCIENCES – FIRST PAPER

June 2009

This document consists of 16 pages.

Strictly not for test/examination purposes

INSTRUCTIONS AND INFORMATION

1. Answer ALL the questions from BOTH SECTIONS A and B.
2. SECTION A (QUESTION 1) must be answered on the attached ANSWER SHEET.
3. Place your ANSWER SHEET for SECTION A (QUESTION 1) within your ANSWER BOOK.
4. SECTION B (QUESTIONS 2 to 4) must be answered in the ANSWER BOOK.
5. Start each question from SECTION B on a NEW page.
6. Read the questions carefully and make sure you answer what is asked.
7. Number the answers correctly according to the numbering system used in this question paper.
8. DO NOT SPLIT the answers to the questions.
9. Write neatly and legibly.

SECTION A**QUESTION 1**

1.1 Various possible options are provided as answers to the following questions. Choose the correct answer and make a cross (X) in the block (A – D) next to the question number (1.1.1 – 1.1.10) on the attached ANSWER SHEET.

1.1.1 The rumen micro-organisms which make use of cobalt to synthesise cobalamine are ...

- A viruses.
- B actinomycetes.
- C bacteria.
- D fungi.

1.1.2 Oogenesis in animals takes place in the ...

- A spermatogonium.
- B ovary.
- C oviduct.
- D corpus luteum.

1.1.3 The provision of shelter for animals in both intensive and extensive farming is aimed at ...

- A encouraging exposure of the animals to extreme climatic conditions and increasing production.
- B preventing exposure of the animals to extreme climatic conditions and decreasing production.
- C preventing exposure of the animals to external parasites and increasing production.
- D preventing exposure of the animals to extreme climatic conditions and increasing production.

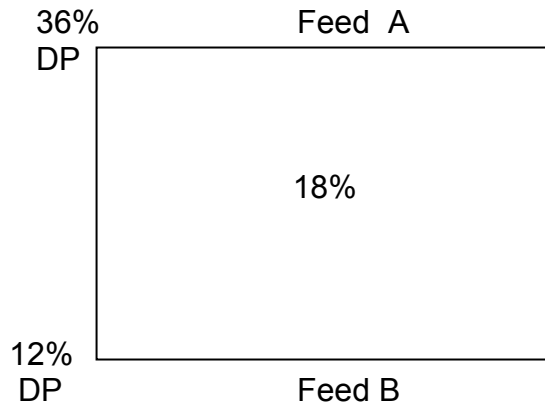
1.1.4 Animals suffering from “milk fever” may be given ... through injection as a remedy.

- A ferrous sulphate
- B calcium boro-gluconate
- C calcium sulphate
- D bone meal

1.1.5 One of the effects of testosterone in an animal is to enhance the ...

- A development of the testes.
- B secretion of oxytocin.
- C secretion of progesterone.
- D development of the udder.

1.1.6 Consider the Pearson's square below:



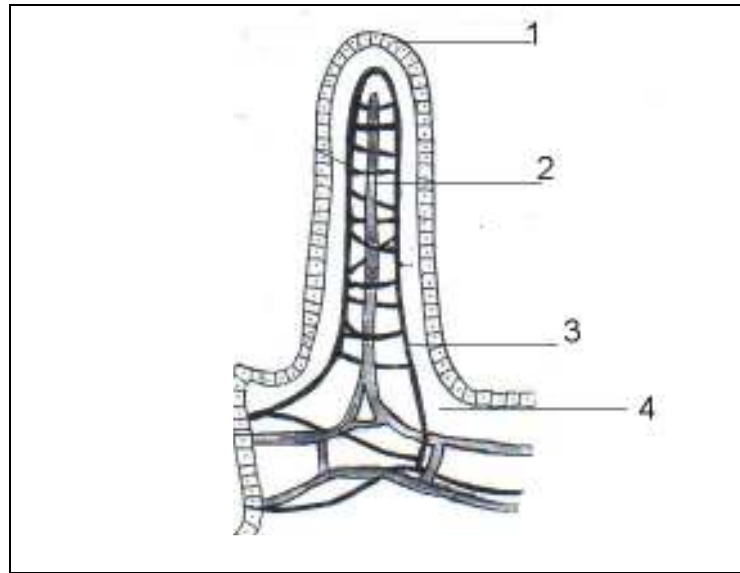
To get the required DP of 18% the feeds A and B need to be mixed in the following proportion:

- A 18 parts of A with 6 parts of B.
- B 12 parts of A with 36 parts of B.
- C 6 parts of A with 18 parts of B.
- D 24 parts of A with 6 parts of B.

1.1.7 In artificial insemination semen is collected from proven bulls and stored. What are the two major forms of investigation done before semen is stored?

- A Viability and temperature of semen
- B Size of sperms and colour of semen
- C Stickiness and time of semen collection
- D Naked eye and microscopic examination

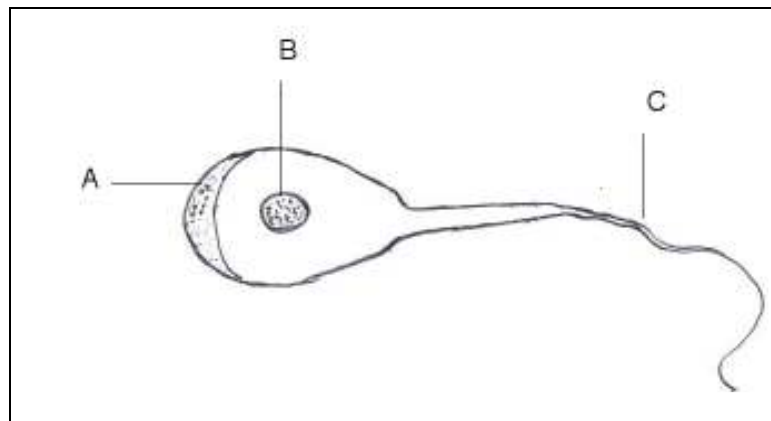
1.1.8 The diagram below represents a villus.



Which part is responsible for the absorption of the end-products of lipid digestion?

- A 2
- B 4
- C 3
- D 1

1.1.9



The diagram above represents a/an ...

- A nerve cell and part B is responsible for the transmission of genetic information to the progeny.
- B male gamete and part C is for locomotion.
- C eye of a bull and part A is the eyelid.
- D male gamete and part B supplies nutrients to the cell.

1.1.10 This hormone is responsible for peristaltic movement of the uterus as well as the flow of milk.

- A Progesterone
- B Oestrogen
- C Oxytocin
- D Relaxin

(10 x 2) (20)

1.2 In the table below a statement with two possible answers is given. Decide whether the statement in COLUMN B relates to ONE, BOTH or NONE of the answers in COLUMN A and indicate the correct answer by making a cross (X) in the block (A – D) next to the question number (1.2.1 – 1.2.5) on the attached ANSWER SHEET.

Example:

COLUMN A		COLUMN B
A:	Nutritive ratio	Protein content of feeds.
B:	Biological value	

Answer:

The statement refers to:			
Only A	Only B	A and B	None
A	B	C	D

		COLUMN A	COLUMN B
1.2.1	A:	Fish meal	Suitable for growth and energy respectively
	B:	Maize meal	
1.2.2	A:	Biuret	NPN but less soluble in water
	B:	Urea	
1.2.3	A:	Rachitis	Deficiency of zinc
	B:	Anaemia	
1.2.4	A:	Carotene	Source of thiamine
	B:	Yeast	
1.2.5	A:	Oil-cake meal	Protein-rich concentrate
	B:	Oat meal	

(5 x 2) (10)

1.3 Give ONE term for each of the following descriptions. Write only the term next to the question number (1.3.1 – 1.3.5) on the attached ANSWER SHEET.

- 1.3.1 The soft, bag-like enlargement in the oesophagus of the fowl.
- 1.3.2 The hormone that is responsible for the regulation of the secretion of succus entericus.
- 1.3.3 The production of an abnormally large number of ova at one ovulation.

1.3.4 The carbohydrate stored in the liver and muscles of animals.

1.3.5 The stage at which a young animal is stopped from drinking milk from its mother. (5 x 2) (10)

1.4 Change the underlined words in the following to make the statements TRUE. Write the appropriate word next to the question number (1.4.1 – 1.4.5) on the attached ANSWER SHEET.

1.4.1 Coagulation is the breaking down of lipids into fine droplets.

1.4.2 The underdevelopment of the sex organs of an animal is termed cryptochidism.

1.4.3 Thyroxin is secreted by the thyroid gland using the element magnesium.

1.4.4 Poikilothermic animals have a constant body temperature.

1.4.5 At pro-oestrus stage the ovary of a cow sheds the female gamete. (5 x 1) (5)

TOTAL SECTION A: 45

SECTION B

START THIS QUESTION ON A NEW PAGE IN THE ANSWER BOOK PROVIDED.

QUESTION 2

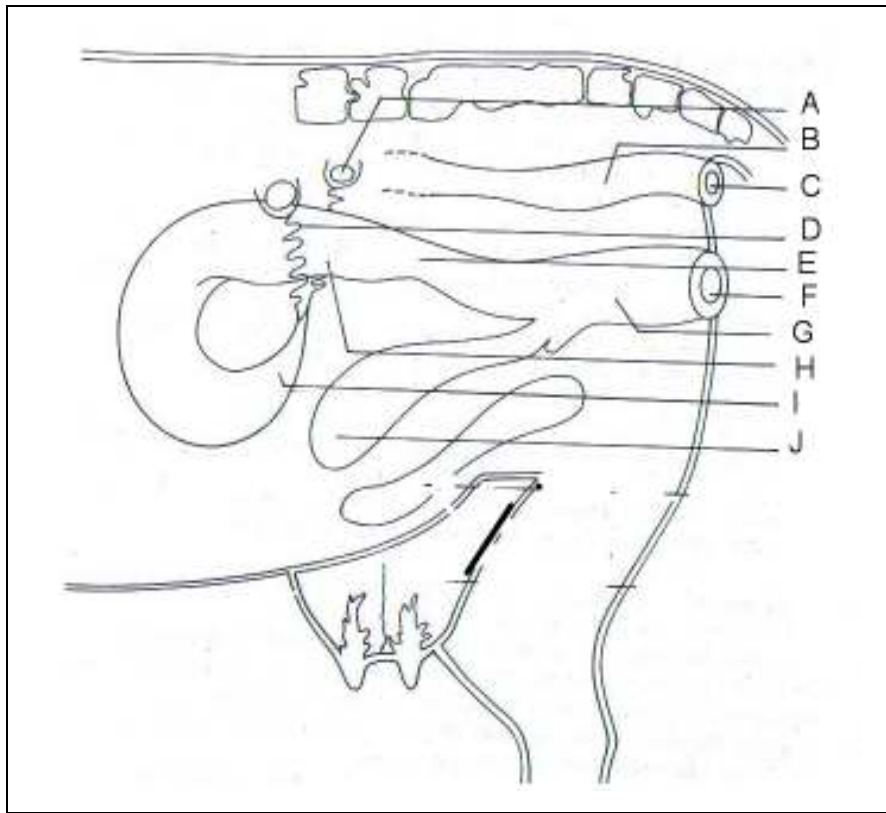
2.1 A 100-hectare farm was purchased by the Khasoma family in January 2006. The farm had 560 pigs, 5 000 broilers and 680 cattle, consisting of 30 bulls and 650 dairy cows. Part of the farm was used for the production of mealies and soya beans. The cattle predominantly fed on the surrounding pasture while the pigs and fowls were kept in pens. The pasture was made up of mainly grasses — *Themeda trianda* and *Sporobolus sp*, without any legume. To the dismay of the family, the cattle were not producing sufficient milk and most of the animals kept on losing weight. The family became envious of the farmers in the neighbourhood where the cattle were well developed and producing appreciable quantities of milk.

The pigs were kept in concrete pens without any supplements, but fed on only swill (kitchen waste) and mealie meal. In contrast the fowls were fed with concentrates. However, it was soon noticed that some of the fowls had their toes curled and could not walk upright.

- 2.1.1 Suggest TWO reasons why the cows were not producing enough milk. (2)
- 2.1.2 Prescribe a suitable ration to rectify the situation in terms of production as mentioned in QUESTION 2.1.1. (2)
- 2.1.3 Deduce the appropriate mineral supplement to avoid the incidence of anaemia in the pigs. (1)
- 2.1.4 From the scenario above, indicate ONE vitamin which was lacking in the concentrates fed to the fowls which resulted in their inability to walk upright. (1)
- 2.1.5 Mention ONE crop grown on the farm which could be used as a protein supplement for the animals. (1)

2.2 In a feeding trial conducted by a group of university students, 3 200 g of green lucerne having a moisture content of 58% was fed to a pig daily. The pig on the average defecated 1 250 g faeces daily with a moisture content of 45%. Calculate the co-efficient of digestibility of the lucerne. Show all your calculations in the answer book. (7)

2.3 The diagram below represents the reproductive organs of a cow. Answer the questions based on it.



2.3.1 Supply names to the parts labelled A, D, F, G, H and I. (6)

2.3.2 Suggest the letter and name of the part where fertilisation takes place. (2)

2.3.3 Indicate THREE hormones which are produced by the part labelled A. (3)

2.4 State THREE major causes of infertility in bulls. (3)

2.5 An Agricultural Institution had four different pure-bred cattle (bulls and cows) on their experimental farm. The Institute started with a total of eight cattle on the farm. For each breed there was a bull and a cow. The breeds were: Aberdeen Angus, Nguni, Friesland and Jersey. All the cattle on the farm were made to graze together and kept in the same kraal.

After a period of three years each cow had given birth to two calves. Surprisingly, each calf had different characteristics from all the original eight cattle.

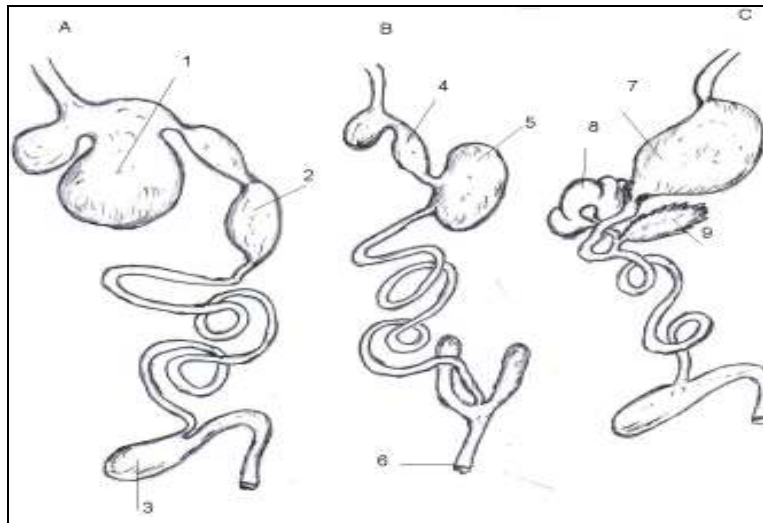
- 2.5.1 Deduce the type of breeding which might have caused the different characteristics observed amongst the calves. (1)
- 2.5.2 Explain TWO advantages of the breeding method mentioned in QUESTION 2.5.1. (4)
- 2.5.3 How does this method of breeding differ from usual indigenous practices? (2)

[35]

START THIS QUESTION ON A NEW PAGE.

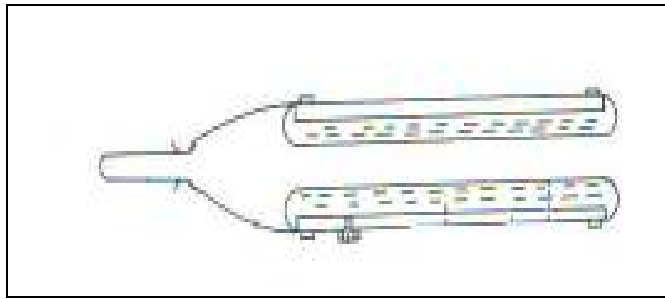
QUESTION 3

- 3.1 List FIVE factors that contribute to various behavioural patterns displayed by farm animals. (5)
- 3.2 Name TWO unrelated forms of breeding. (2)
- 3.3 The diagrams below represent the alimentary canals of domestic animals. Answer the questions based on them.



- 3.3.1 Identify the types of animals having the alimentary canals labelled A, B and C. (3)
- 3.3.2 Suggest THREE numbers and indicate the terms given to these parts where gastric juice is secreted. (6)
- 3.3.3 Indicate the number in diagram A which is not well developed in a two-day old calf. (1)
- 3.3.4 Assuming the part numbered 9 is surgically removed from the live animal. Deduce THREE consequences of such an operation on the animal. (6)

3.4 Answer the following questions based on the diagram below.



- 3.4.1 Identify this instrument and describe the purpose for which it is used. (3)
- 3.4.2 Suggest another method which could be used for the same purpose as mentioned in QUESTION 3.4.1. (1)
- 3.4.3 Predict the idea for which these two methods are employed in animal breeding. (1)
- 3.4.4 Justify the use of the procedure mentioned in QUESTION 3.4.3 to improve the economic situation of farmers who adopt this system. (3)

3.5 Maceration and mummification are some of the problems cows encounter during pregnancy. Distinguish between these two pregnancy problems and indicate their negative effects on the profitability of a farming enterprise.

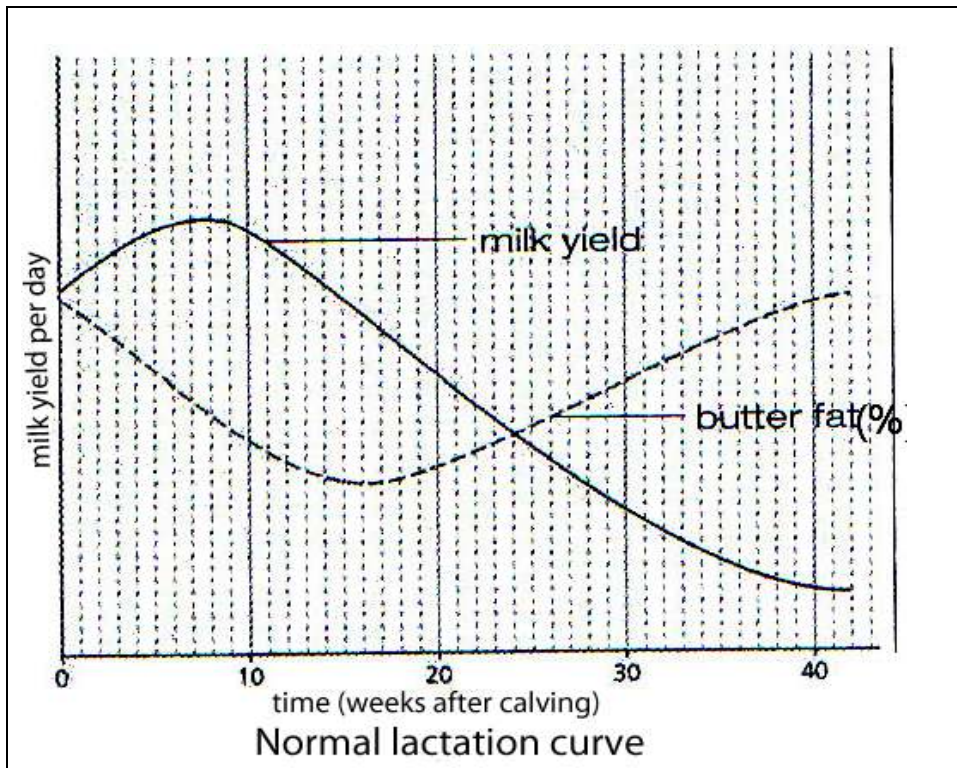
(4)
[35]

START THIS QUESTION ON A NEW PAGE.

QUESTION 4

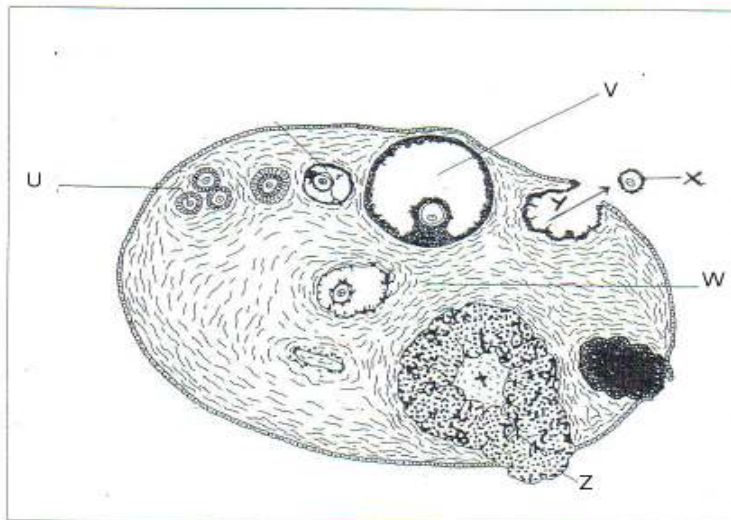
START THIS QUESTION ON A NEW PAGE

4.1 The graph below represents the normal lactation curve in cows. Answer the questions which are based on it.



- 4.1.1 Deduce from the graph the week at which the milk yield is at its peak. (1)
- 4.1.2 Discuss the relationship between the percentage butter fat content and the quantity of milk produced. (3)
- 4.1.3 Colostrum, the milk produced soon after parturition has tremendous positive effects on the health of the calf. Justify the validity of this statement. (2)

- 4.2 The oestrus cycle is a physiological process which is controlled by a number of hormones. The diagram below depicts the various activities which take place during the cycle.



- 4.2.1 Deduce the term given to the process labelled Y and indicate the hormone which is responsible. (2)
- 4.2.2 Predict what would happen if the structure labelled X becomes fertilised in the fallopian tube but the zygote does not descend into the uterus as a result of a blockage in the fallopian tube. (2)
- 4.2.3 Describe the role of structure Z from conception to birth in a cow. (3)
- 4.2.4 State the hormone responsible for stage U to V. (1)
- 4.2.5 Suggest the main relevance of the hormone which is released by the structure labelled V. (1)
- 4.3 A concentrate for piglets had TDN of 96% and DP of 24%.
- 4.3.1 Calculate the nutritive ratio (NR) of the concentrate. Show all your calculations in the answer book. (4)
- 4.3.2 Laboratory analysis revealed that this concentrate is suitable for both growth and production. Justify this finding. (2)

4.4 A family visited a nearby farm where the farmer took them around and showed them all the undertakings on the farm. The visiting family noticed a variety of livestock – cattle, sheep, goats, ostriches, fowls, pigs and turkeys. Besides the grazing land, the farmer had about 30 hectares of land on which the following crops were cultivated: mealies, peanuts and sunflowers.

All equipment needed for various procedures were also available on the farm. Trees had been planted at vantage points to serve as shelter for the animals which grazed on the pastures. The pigs and fowls were permanently kept in pens and provided with well-balanced rations. The ruminants were at times given concentrates as the need arose. During the winter months silage prepared on the farm was fed to the cattle.

- 4.4.1 Name the equipment the farmer used in castrating the male animals. (1)
- 4.4.2 Which crop would be the most suitable for the preparation of silage on the farm? (1)
- 4.4.3 From the crops the farmer cultivated on the farm, which of them could be used as protein supplements for the livestock? (2)
- 4.4.4 Explain the reasons why at times concentrates were fed to the livestock. (5)
- 4.4.5 Local, indigenous livestock farmers also plant trees to provide shelter for their livestock. What could be the disadvantages for a livestock farmer who does not engage in this practice? (5)

[35]

TOTAL SECTION B: 105

GRAND TOTAL: 150