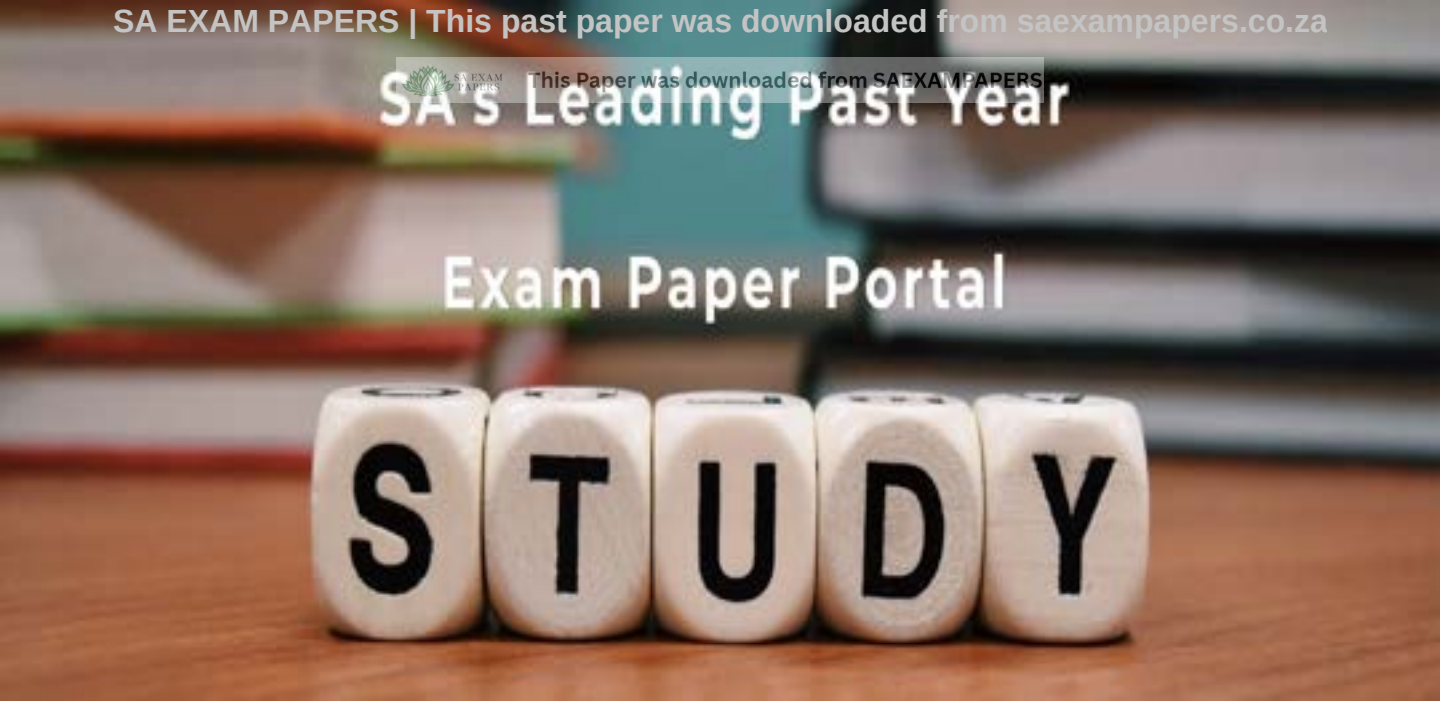


education

Department:
Education
North West Provincial Government
REPUBLIC OF SOUTH AFRICA

PROVINCIAL ASSESSMENT

GRADE 12

AGRICULTURAL SCIENCES P1

JUNE 2025

MARKS: 150

TIME: 2½ hours

This question paper consists of 15 pages.

INSTRUCTIONS AND INFORMATION

1. This question paper consists of TWO sections, namely SECTION A and SECTION B.
2. Answer ALL the questions in the ANSWER BOOK.
3. Read the questions carefully.
4. Answer ONLY what has been asked.
5. Start EACH question on a NEW page.
6. Number the answers correctly according to the numbering system used in this question paper.
7. You may use a non-programmable calculator.
8. Show ALL calculations, including formulae, where applicable.
9. Write neatly and legibly.

SECTION A

QUESTION 1

1.1 Various options are provided as possible answers to the following questions. Choose the answer and write only the letter (A–D) next to the question numbers (1.1.1 to 1.1.10) in the ANSWER BOOK, e.g. 1.1.11 B.

1.1.1 ONE of the following is NOT part of a fowl's alimentary canal:

A Ventriculus
B Anus
C Proventriculus
D Caeca

1.1.2 … is an example of a macro-element.

A Magnesium
B Iodine
C Copper
D Cobalt

1.1.3 The type of digestion whereby large food particles are broken down into smaller pieces by enzymes:

A Mechanical digestion
B Chemical digestion
C Biological digestion
D Bacterial digestion

1.1.4 The following are the requirements for the normal functioning of rumen micro-organisms:

(i) presence of carbon dioxide
(ii) regular intake of feed
(iii) osmotic conditions
(iv) presence of oxygen

Choose the CORRECT combination:

A (i), (ii) and (iii)
B (i), (iii) and (iv)
C (ii), (iii) and (iv)
D (i), (ii) and (iv)

1.1.5 … injections are introduced directly into the jugular vein.

A Intramuscular
B Subcutaneous
C Intravenous
D Intramammary

1.1.6 Swine flu disease symptoms are common in ONE of the following animal species:

A Horses
B Poultry
C Cattle
D Pigs

1.1.7 The following are basic guidelines to be considered when handling large farm animals:

(i) Avoid the blind spot
(ii) Always leave yourself an escape way
(iii) Shout and hit the animals
(iv) Handle animals in a group

Choose the CORRECT combination:

A (i), (ii) and (iii)
B (i), (iii) and (iv)
C (ii), (iii) and (iv)
D (i), (ii) and (iv)

1.1.8 The best orientation for a broiler house:

A East
B North
C West
D South

1.1.9 ONE of the following is NOT an important stage of reproduction:

A Copulation
B Fertilisation
C Ingestion
D Parturition

1.1.10 The hormone responsible for the milk ejection reflex is secreted by the … gland.

A adrenalin
B hypothalamus
C mammary
D pituitary

 (10 x 2) (20)

1.2 Indicate whether each of the descriptions in COLUMN B applies to **A ONLY**, **B ONLY**, **BOTH A AND B** or **NONE** of the items in COLUMN A. Write **A only**, **B only**, **both A and B** or **none** next to the question numbers (1.2.1 to 1.2.5) in the ANSWER BOOK, e.g. 1.2.6 B only.

COLUMN A			COLUMN B
1.2.1	A:	Oat meal	Example of a protein-rich concentrate
	B:	Carcass meal	
1.2.2	A:	Assimilation	The process whereby digested food is taken up from the bloodstream into the body cells
	B:	Absorption	
1.2.3	A:	Furrowing pen	The small area where sheep are kept under intensive conditions and fed for maximum production
	B:	Feed shed	
1.2.4	A:	Nutrition	Factors used to increase animal production under intensive farming
	B:	Reproduction	
1.2.5	A:	Met-oestrus	Period of the oestrus cycle during which the hormone progesterone is secreted
	B:	Pro-oestrus	

(5 x 2) (10)

1.3 Give ONE word/term for each of the following descriptions. Write only the word/term next to the question numbers (1.3.1 to 1.3.5) in the ANSWER BOOK.

1.3.1 The enzyme in the small intestines responsible for fat digestion

1.3.2 The ability of farm animals to maintain a constant body temperature

1.3.3 When a male animal is interested in a female animal but lacks the ability to serve and fertilise the female

1.3.4 The process in which a cow is treated with hormones to produce many more ova

1.3.5 A long narrow instrument used to deposit semen into the uterus of a cow during artificial insemination (5 x 2) (10)

1.4 Change the UNDERLINED WORD(S) in EACH of the following statements to make them TRUE. Write only the answer next to the question numbers (1.4.1 to 1.4.5) in the ANSWER BOOK.

1.4.1 Villi is the collective name for the finger-like projections in the rumen of farm animals.

1.4.2 The free zone is the distance farm animals keep between themselves and a threat or danger.

1.4.3 Embryo transplant is the process of removing fertilised egg cells from a superior donor cow.

1.4.4 Ovigenesis is the process by which the male reproductive cells are formed.

1.4.5 A sterile female calf born as a non-identical twin of a male calf is known as mastitis.

(5 x 1) (5)

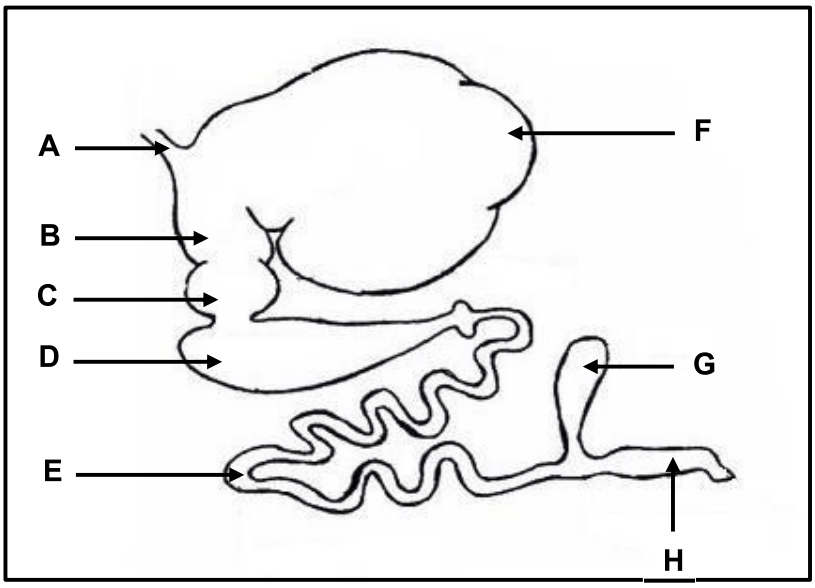
TOTAL SECTION A: 45

SECTION B

QUESTION 2: ANIMAL NUTRITION

Start this question on a NEW page.

2.1 The diagram below represents the alimentary canal of a farm animal.



2.1.1 Classify the farm animal in the diagram above. (1)

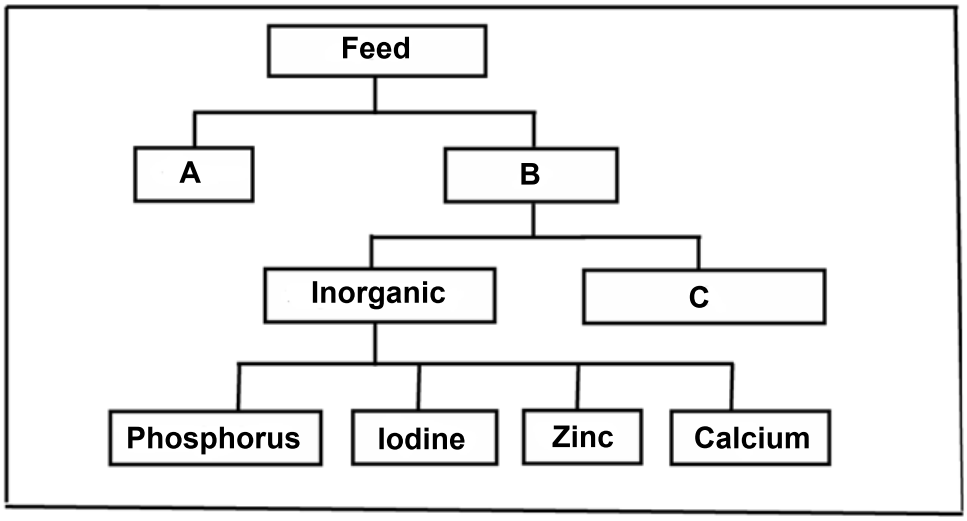
2.1.2 Identify the farm animal with the alimentary canal represented above. (1)

2.1.3 Give a reason for the answer to QUESTION 2.1.2, by referring to the diagram above. (1)

2.1.4 Identify, in the diagram above, the parts labelled **B**, **D** and **G**. (3)

2.1.5 Name TWO adaptations of part **F** that enables the digestion of feed rich in fibre. (2)

2.2 The schematic representation below illustrates the components of feeds.



2.2.1 Label the nutrient components **A**, **B** and **C**. (3)

2.2.2 State TWO roles of component **A** in digestion of farm animals. (2)

2.2.3 Identify the component in the schematic representation above that will result in the following deficiency symptoms:

(a) Parakeratosis in pigs (1)

(b) Pica in cattle (1)

(c) Goitre in sheep (1)

2.3 In a feed trial, a farm animal ingested 10,5 kg of dry oat hay and excreted 2,5 kg dry manure.

2.3.1 Calculate the digestibility co-efficient of the ingested hay. Show ALL calculations. (4)

2.3.2 Indicate an implication of the digestibility coefficient of the feed calculated in QUESTION 2.3.1. (2)

2.4 The nutritional composition of two different feeds are shown below.

COMPOSITION	FEED A	FEED B
Digestible carbohydrates	40%	20%
Digestible protein (DP)	9%	34%
Digestible fat	28%	17%
Nutritive ratio (NR)	**1 : 9**	–

2.4.1 Calculate the nutritive ratio (NR) of FEED **B**. Show ALL calculations, including the formula. (4)

2.4.2 Justify the suitability of FEED **B** for growing animals based on its nutritive ratio (NR). (2)

2.5 The table below shows the fodder flow plan over a period of six months.

MONTHS	JAN.	FEB.	MAR.	APR.	MAY	JUN.
Feed available (ton)	180	150	110	80	60	40
Feed requirement (ton)	110	110	110	110	110	110

2.5.1 Define the term *fodder flow*. (2)

2.5.2 Identify any TWO months in the table above when the feed was sufficient. (2)

2.5.3 Calculate the shortage of feed during May in kilograms (kg). (3)
[35]

QUESTION 3: ANIMAL PRODUCTION, PROTECTION AND CONTROL

Start this question on a NEW page.

3.1 The picture below shows animal production and farming systems.

3.1.1 Identify EACH of the following in the picture above:

(a) Production system (1)

(b) Farming system (1)

3.1.2 Justify the answer to QUESTION 3.1.1(a) by referring to the picture above. (1)

3.1.3 Compare between the production system identified in QUESTION 3.1.1(a) and the one NOT practised by the farmer in the picture above based on the following:

(a) Carcass quality (2)

(b) Energy used (2)

(c) Exposure to diseases (2)

3.2 Choose an explanation from the list below that matches the way in which animals lose heat in QUESTIONS 3.2.1 to 3.2.5. Write only the letter (A–E) next to the question numbers (3.2.1 to 3.2.5) in the ANSWER BOOK.

A The loss of heat when the sweat dries on the skin
B Loss of heat from a warm body to a colder surrounding atmosphere
C Loss of heat when a body is in contact with a colder surface
D The loss of body heat when urine and faeces leave the body
E The upward movement of warm air and the downward movement of colder air

3.2.1 Convection (1)

3.2.2 Conduction (1)

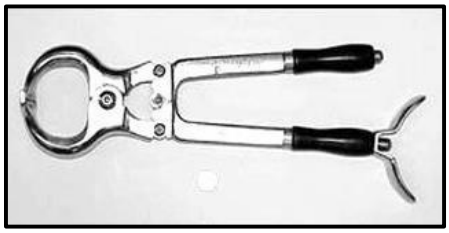
3.2.3 Excretion (1)

3.2.4 Evaporation (1)

3.2.5 Radiation (1)

3.3 The pictures below show the tools utilised to handle farm animals.

PICTURE A



PICTURE B

3.3.1 Identify the tools in PICTURE **A** and PICTURE **B** above. (2)

3.3.2 Give TWO reasons for handling cattle. (2)

3.4 The table below shows different symptoms of diseases affecting farm animals.

ANIMAL 1	ANIMAL 2
Excited, aggressive and excessive salivation	Nervousness, froth around the mouth and nose

3.4.1 Classify the diseases affecting animal **1** and animal **2** respectively. (2)

3.4.2 Name the diseases affecting animal **2**. (1)

3.4.3 Indicate the animal with a zoonotic disease. (1)

3.4.4 Give TWO roles of the state in controlling the spreading of diseases. (2)

3.5 The statements below indicate various stages of the life cycle of a parasite.

A Eggs hatch into six-legged larvae
B Nymph molts into adult
C Adults attach to the host
D Larva becomes nymph on first host
E Adult females drop off host to lay eggs

3.5.1 Identify the type of parasite illustrated in the statements above. (1)

3.5.2 Classify the parasite according to its life cycle as indicated in the statements above. (1)

3.5.3 Rearrange the stages of the life cycle of the parasite above in their chronological order. Write ONLY the letters (A–E). (5)

3.5.4 State TWO economic implications of this parasite for farmers. (2)

3.6 List TWO plants that are poisonous to farm animals. (2)
[35]

QUESTION 4: ANIMAL REPRODUCTION

Start this question on a NEW page.

4.1 The diagrams below show male and female reproductive organs.

DIAGRAM A

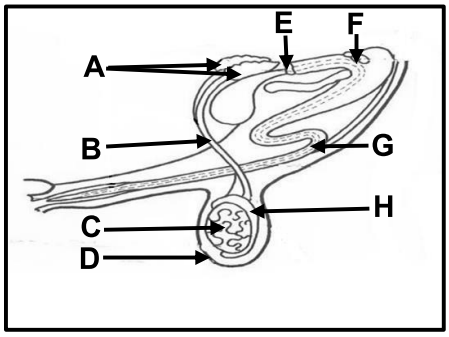
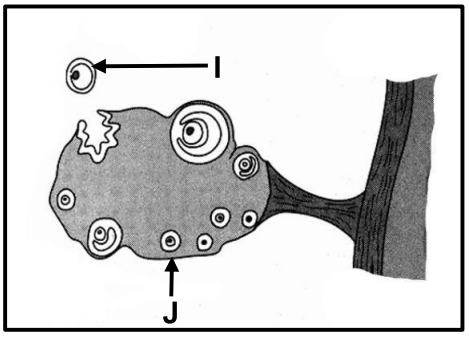


DIAGRAM B



4.1.1 Give a term that describes the parts **A**, **E** and **F**. (1)

4.1.2 Identify the following:

(a) Part **D** in diagram **A** (1)

(b) Part **G** in diagram **A** (1)

(c) The process taking place in diagram **B** (1)

(d) Part **J** in diagram **B** (1)

4.1.3 Name TWO congenital defects of part **C**. (2)

4.1.4 Identify the part in DIAGRAM **A** that performs a function similar to the one performed by **J** in DIAGRAM **B**. Write down ONLY the letter (**A**–**H**). (1)

4.2

A reproductive technique of producing similar populations of genetically identical individuals that occur in nature is practised on farms.

4.2.1 Identify the reproductive technique in the statement above. (1)

4.2.2 Indicate TWO types of the reproductive technique identified in QUESTION 4.2.1 above. (2)

4.2.3 State ONE disadvantage of the reproductive technique identified in QUESTION 4.2.1 above. (1)

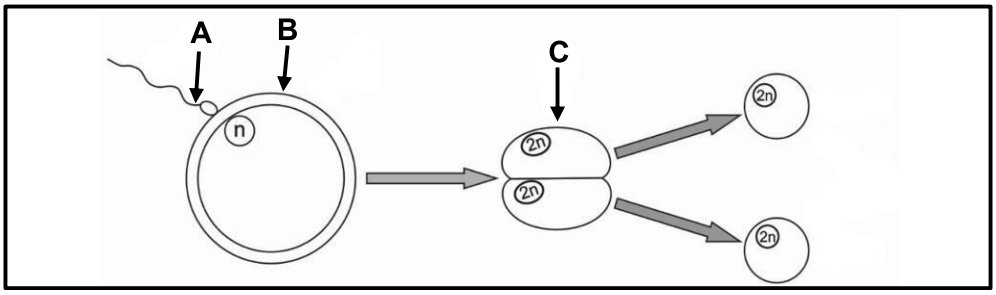
4.3 Many farmers make use of good-quality semen of superior bulls and replace natural mating with a method whereby the reproductive life of a bull can be extended long after its natural ability to serve and fertilise cows, even after the death of the bull.

4.3.1 Identify the reproductive technique in the statement above. (1)

4.3.2 State TWO characteristics of good quality semen. (2)

4.3.3 Give TWO requirements for the collection of semen. (2)

4.4 The diagram below illustrates a process that occurs during reproduction.



4.4.1 Identify the reproductive process that takes place between parts **A** and **B** in the diagram above. (1)

4.4.2 Identify parts **B** and **C** in the diagram above. (2)

4.4.3 Name the section of part **A** that is responsible for the following:

(a) Motility (1)

(b) Carrier of genetic information (1)

4.5 The diagrams below represent particular stages of pregnancy in a cow.

DIAGRAM B

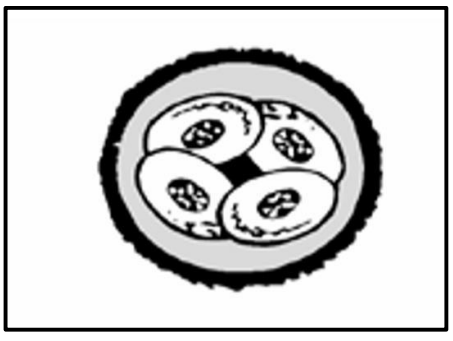
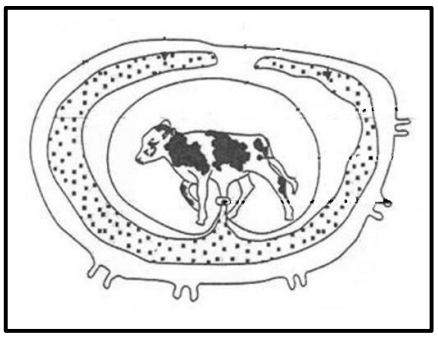


DIAGRAM B



4.5.1 Identify the stages of pregnancy illustrated in DIAGRAMS **A** and **B**. (2)

4.5.2 Deduce the stage of pregnancy that follows the stage in DIAGRAM A. (1)

4.5.3 Indicate the condition that would occur in each of the following situations:

(a) The foetus dies, decays and remains inside the cow (1)

(b) The fluid around the foetus is reabsorbed and a hard skeleton remains (1)

(c) Pregnancy is terminated before the normal time of parturition and the dead foetus is expelled (1)

4.6 The table below shows the percentage (%) of butter fat and crude fibre in the milk of different dairy breeds.

BREED TYPE	BUTTER FAT (%)	CRUDE FIBRE (%)
Holstein	3,5	4
Ayrshire	3,9	6
Brown Swiss	4,0	8
Guernsey	4,6	10
Jersey	5,0	12

4.6.1 Draw a combined bar graph representing the butter fat and crude fibre percentages of different dairy breeds. (6)

4.6.2 Identify, from the table above, a dairy breed that produces milk with the highest crude fibre percentage. (1)

[35]

TOTAL SECTION B: 105
GRAND TOTAL: 150