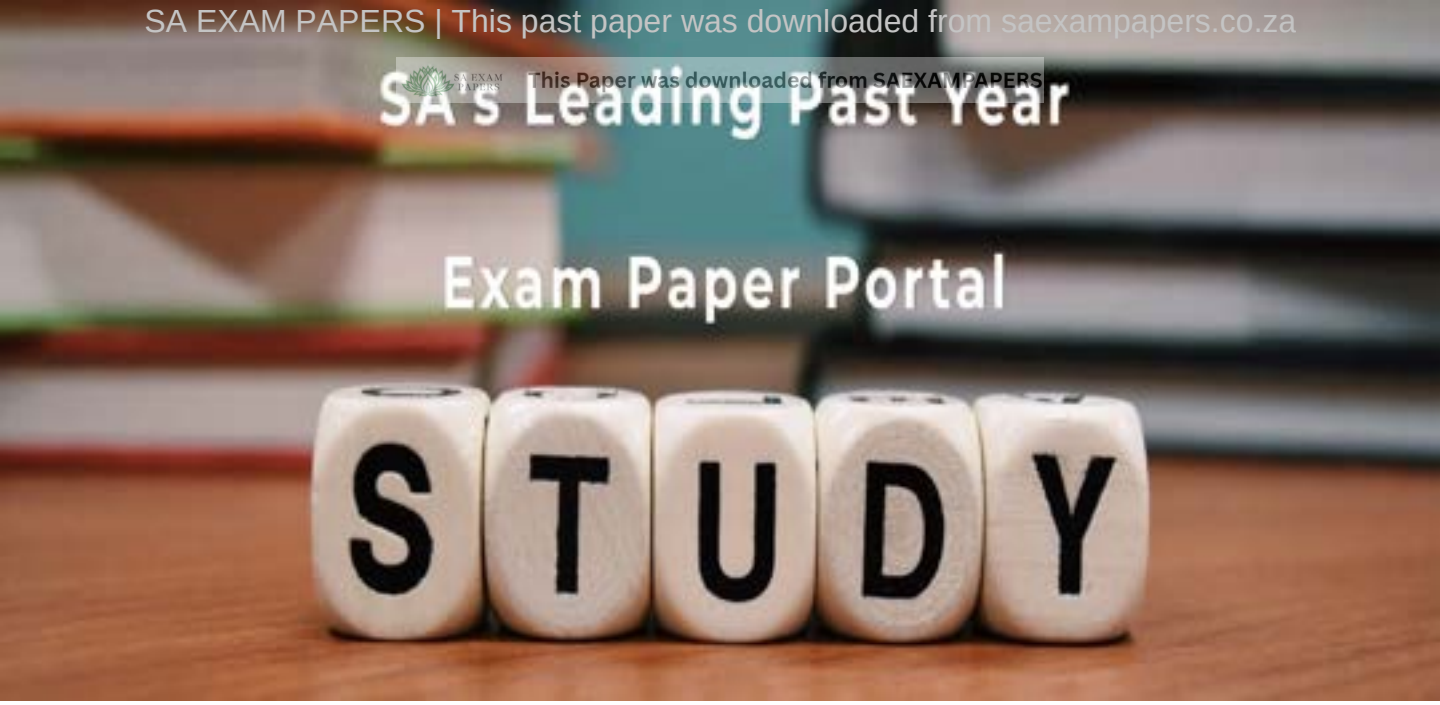


LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF
EDUCATION

CAPRICORN NORTH DISTRICT

NATIONAL SENIOR CERTIFICATE

Grade 12

AGRICULTURAL SCIENCES P1

PRE TRIAL EXAMINATION

14 AUGUST 2025

MARKS: 150

DURATION :2.5HRS

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 The first three compartments of a ruminant stomach:

A. Rumen complex
B. Forestomach
C. Abomasum
D. Digestive system

1.1.2 Volatile fatty acids that are end products of rumen microbial fermentation include… acids.

A. Methanoic and butyric
B. Acetic and propionic
C. Acetic and ethanoic
D. Methanoic and ethanoic

1.1.3 During the active absorption of food…

A. CO2 and methane move along the concentration gradient.
B. The energy needed is supplied by ATP.
C. Molecules move from a higher to a lower concentration.
D. Glucose and amino acids are absorbed along the concentration gradient.

1.1.4 The following occurs in the villi during absorption:

i. Blood capillaries absorb amino acids.
ii. Lacteal absorbs fatty acids and glycerol.
iii. Lacteal absorbs carbohydrates and proteins.
iv. Micro-villi increase the surface area for absorption.

Choose the CORRECT combination

A. (ⅰ), (ⅰⅰⅰ) and (ⅰv)
B. (ⅰⅰ), (ⅰⅰⅰ) and (ⅰv)
C. (ⅰ), (ⅰⅰ) and (ⅰⅰⅰ)
D. (ⅰ), (ⅰⅰ) and (ⅰv)

1.1.5 ONE of the following is NOT a factor that increases production in an Intensive production system:

A. Balanced nutrition
B. Proper environment
C. Inadequate shelter
D. Breeding resistant animals

1.1.6 The following are basic guidelines to be considered when transporting animals:

i. Do not load animals too long before departure.
ii. Do not feed animals 12 hours before they are loaded.
iii. Transport cattle, sheep and goats on the same truck.
iv. Group animals to establish social grouping before loading.

Choose the CORRECT combination:

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

1.1.7 … is a protozoan disease in fowls that results in thin watery diarrhea containing mucus.

A. Avian flu
B. Coccidiosis
C. Newcastle disease
D. H1N1

1.1.8 The effects of external parasites may be reduced by…

A. Applying fewer concentrated pesticides regularly.
B. Dosing animals frequently using smaller dosages.
C. Exposing animals to the parasite to develop resistance.
D. Reducing the strength of the pesticide to save money.

1.1.9 Multiplets formed from the release of more than one ovum are…

A. Identical
B. Monozygotic
C. Freemartins
D. Non-identical

1.1.10 The hormone that causes the corpus luteum to regress, as an indication that the cow is not pregnant:

A. Oestrogen
B. Prostagladin
C. Relaxin
D. Progesterone (10x2) **(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 number (1.2.1 to 1.1.5) In the ANSWER BOOK, e.g. 1.2.6 B only.

COLUMN A			**COLUMN B**
1.2.1	A:	Rectum	The enlarged first part of the large intestine in pigs where absorption of water occurs
	B:	Caecum	
1.2.2	A:	Pearson square	Method of balancing the rations to determine the required protein value in a feed mixture
	B:	Feed square	
1.2.3	A:	Large-scale production system	A farming system that produces food, mainly to feed the family
	B:	Modern farming system	
1.2.4	A:	Deep-litter system	Intensive production system where chickens are kept in a house throughout their lives.
	B:	Battery system	
1.2.5	A:	Condition	The forelegs and nose of the foetus point towards the pelvis with the head resting on its forelegs during parturition.
	B:	Presentation	

(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 absorption of volatile fatty acids along the concentration gradient through the rumen wall.

1.3.2 A preventative measure whereby farm animals with a contagious disease are kept away from healthy animals.

1.3.3 The failure of a cow to expel the placenta within 12-24 hours after parturition.

1.3.4 The process by which the male reproductive cells are formed

1.3.5 A device placed around the lower leg of a cow to detect her movement and increased activities during oestrus. (5x2) (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 <u>Proper</u> protein supplies the required amount and proportion of all amino acids.

1.4.2 An <u>elastrator</u> is a castration tool used in farm animals and causes bleeding.

1.4.3 The <u>centriole</u> releases an enzyme that assists the sperm cell to penetrate the ovum.

1.4.4 Di-oestrus happens when sexually mature female animals show no signs of standing heat.

1.4.5 Gestation period refers to the period in cows between two lactations. (5 x 1)

(5)

SECTION B

QUESTION 2: ANIMAL NUTRITION

Start this question on a NEW page.

2.1 The diagrams below show the alimentary canals of farm animals.

DIAGRAM A

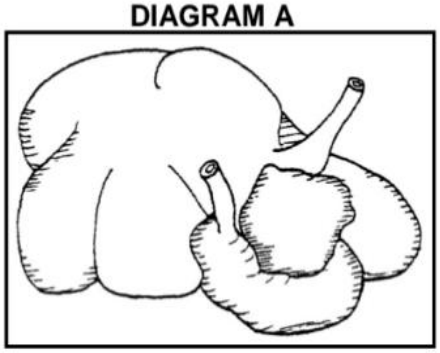
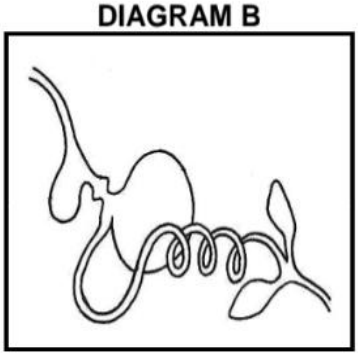


DIAGRAM B



2.1.1 Classify the TWO animals represented by DIAGRAM **A** and DIAGRAM B respectively. (2)

2.1.2 Name TWO adaptation features of the animal in DIAGRAM **A** that enables it to survive by feeding primarily on hay. (2)

2.1.3 Give a reason why the animal in DIAGRAM B cannot be fed a ration that is high in crude fibre content. (1)

2.1.4 Explain how the animal in DIAGRAM A benefits from the consumption of a non-protein nitrogenous substance such as urea. (2)

2.2 The information below shows the composition of the ration for farm animals:

Maize meal = 12%
Sunflower oilcake meal = 18%
Lucerne hay = 60%
Oats hay = 10%

2.2.1 From the information above, identify the feed that is an example of EACH of the following:

(a) Carbohydrate-rich roughage (1)

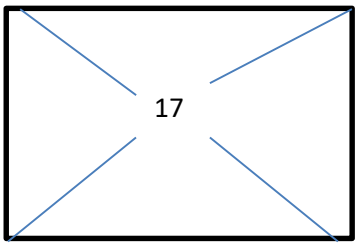
(b) Protein-rich concentrate (1)

2.2.2 The ration in QUESTION 2.2 is NOT recommended as the only source of food for lambs less than two weeks old.
Give ONE to support the statement (2)

2.2.3 State ONE important point about grass hay in rations for mature ewes.(1)

2.3 Two feeds (maize meal and sunflower oilcake meal) are mixed to obtain a ration with the desired protein content.

FEED A: 37% 8 Parts



FEED: 9% 20 Parts

2.3.1 Indicate the parts of the ration that represent maize meal and sunflower oilcake meal. (2)

2.3.2 Calculate the percentage of feed B in the mixture. Show ALL calculations. (3)

2.3.3 Calculate the quantity of maize meal (in kg) in 250 kg of mixture. Show ALL calculations. (2)

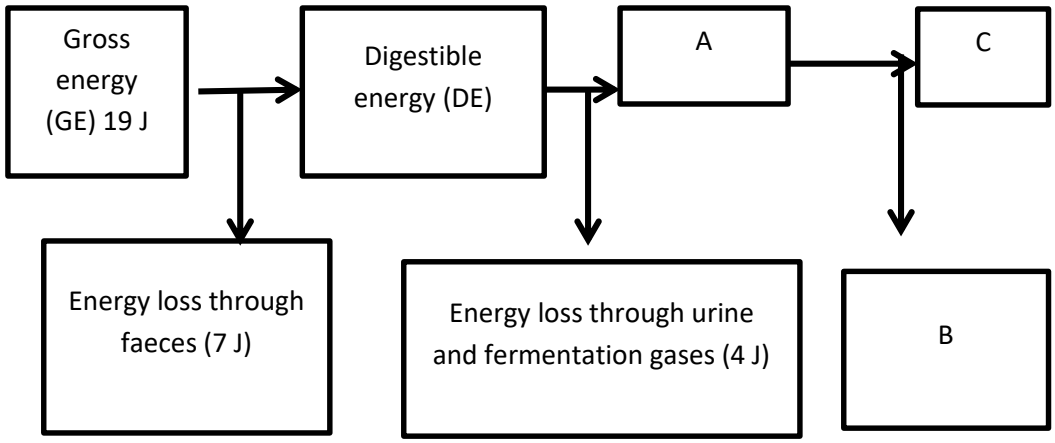
2.4 The table below shows the laboratory results of two feeds.

FEED	TDN (%)	DP (%)	NR
A	75	15	1:4
B	80	7	……

2.4.1 Calculate the nutritive ratio (NR) of feed B. Show ALL calculations, including the formula (3)

2.4.2 Justify the suitability of feed A and feed B for growing animals based on their nutritive ratios (NR). (2)

2.5 The diagram below shows the energy values of a feed.



2.5.1 Calculate the energy value represented by A. Show ALL calculations. (2)

2.5.2 Identify the energy loss in B. (1)

2.5.3 Give TWO reasons why energy in C is important to farm animals. (2)

2.6 The table below shows the quantities of minerals in three different rations prepared for animals.

RATION	Ca(mg/kg)	P(mg/Kg)	Mg (Mg/Kg)
A	7.0	4,5	6,5
B	0,5	1,5	3,0
C	3,5	5,0	2,0

Draw a combined bar graph of the different quantities of minerals in the three different rations. (6)

[35]

QUESTION 3: ANIMAL PRODUCTION, PROTECTION AND CONTROL

Start this question on a NEW page.

3.1 The pictures below refer to a production system in pigs.

PICTURE A

PICTURE B

3.1.1 Identify

(a) The production system used by the pig farmer represented by picture A above (1)

(b) An example of the pig production system represented in picture B above (1)

3.1.2 Identify the animal handling facility in picture A. (1)

3.1.3 Give ONE reason for housing pigs in the facility in picture A. (1)

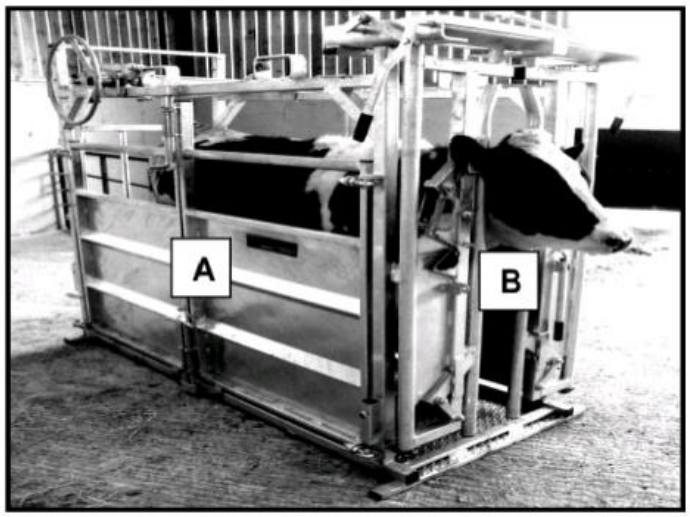
3.1.4 Deduce TWO factors from picture A that contribute to increased production. (1)

3.2 Choose an explanation from the list below that matches the animal behaviour 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 See shadow on their path or vision area
B Normal maternal behaviour
C Normal animal behaviour
D Animals establish their dominance in the flock
E Normal reproductive behavior

3.2.1 Female animals in the herd mount other females and allow other animals to mount them (1)
3.2.2 A flock of farm animals looks healthy and graze calmly on natural pasture (1)
3.2.3 Animals head-butting each other (1)
3.2.4 Animals do not want to enter a gate leading to a passage area (1)
3.2.5 Animals become aggressive after giving birth (1)

3.3 The facilities below are used for handling farm animals.



3.3.1 Identify facilities **A** and **B** above. (1)

3.3.2 Indicate the purpose of using facility **B**. (1)

3.3.3 Give TWO reasons for handling farm animals using the facilities above. (2)

3.4 State TWO basic requirements for transporting farm animals. (2)

3.5

A mosquito-borne viral disease that affects sheep, cattle and goats causes abortion, blood-stained nasal discharge and diarrhoea which may lead to the death of farm animals. People can get infected if they handle blood, tissues or other body fluids of animals that are infected with this disease. Farmers should alert authorities if they suspect that animals are infected with the disease on their farms.

3.5.1 Name the disease described in the scenario above (1)

3.5.2. Identify an example of EACH of the following in the scenario above:

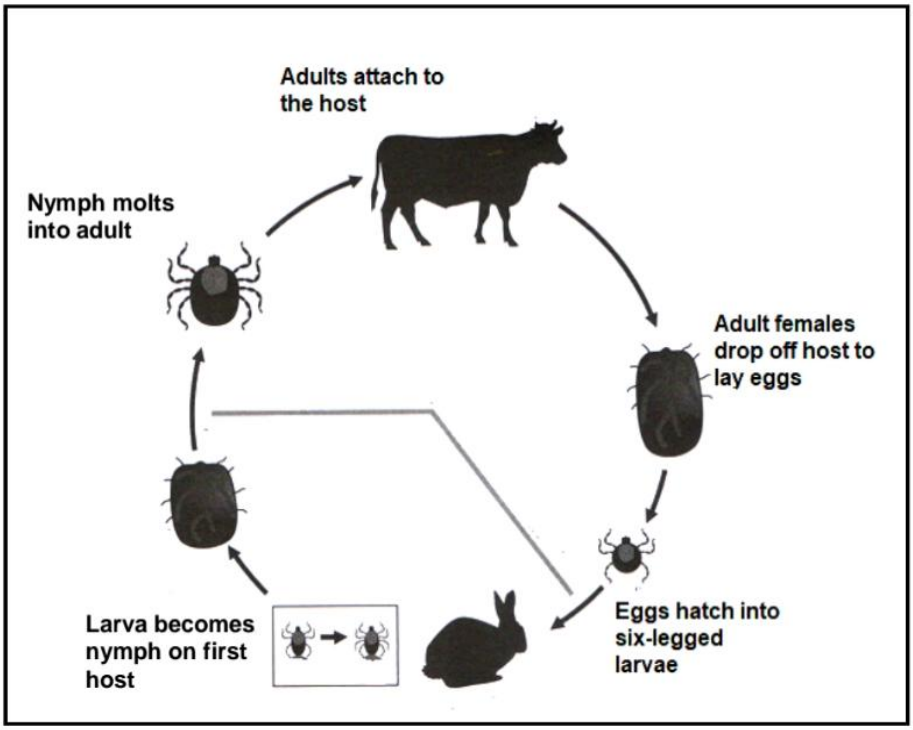
(a) Vector (1)
(b) Pathogen (1)

3.5.3 The disease in the scenario above is deemed notifiable. Justify this statement. (1)

3.5.4 Give a term for the description which indicates that the disease can Infect people if they handle infected blood, tissues and other fluid (1)

3.5.5 Suggest TWO economic implications of animal diseases to a farmer (2)

3.6 **The diagram below shows the life cycle of a parasite.**



3.6.1 Classify the parasite above according to the life cycle. (1)

3.6.2 Give a reason for the answer to QUESTION 3.6.1 by referring to the diagram above. (1)

3.6.3 Identify THREE stages in the life cycle of the parasite above. (3)

3.7 Below is a list of internal parasites that affect farm animals.

Tapeworm; liver fluke; roundworm

Choose the parasite above that matches EACH of the following descriptions:

a) Causes nodules in the liver (1)
b) Does not need an intermediate host (1)
c) Heavy infestation causes a potbelly and the appearance of proglottids in faeces (1)

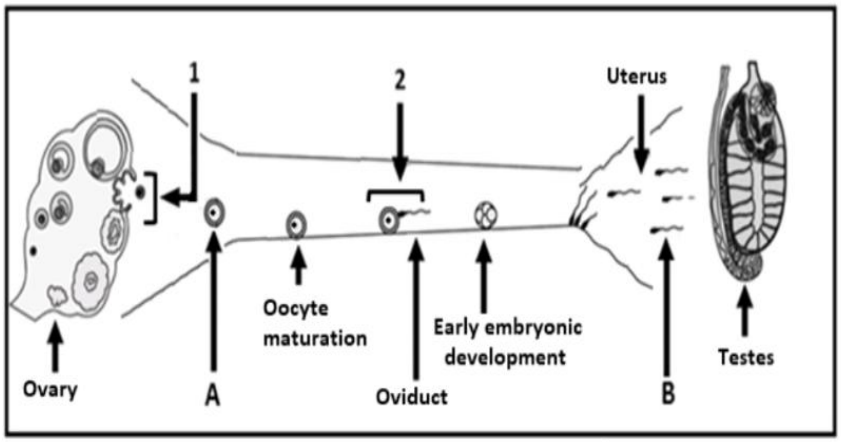
3.8 State TWO basic principles of good health that a farmer can apply to control Internal parasites. (2)

[35]

QUESTION 4: ANIMAL REPRODUCTION

Start this question on a NEW page.

4.1 The diagram below shows the reproductive process in farm animals.



4.1.1 Identify A and B in the diagram above. (2)

4.1.2 Name the process through which B is produced. (1)

4.1.3 Give ONE example of a secondary female reproductive organ visible in the diagram above. (1)

4.1.4 Identify the reproductive processes taking place in 1 and 2. (2)

4.1.5 Give ONE function of EACH of the following organs:

a) Fallopian tube (1)

b) Uterus (1)

4.2 Farmers usually manipulate the reproductive process in female farm animals so that they can come on heat at the same time.

4.2.1 Name the reproductive process described above. (1)

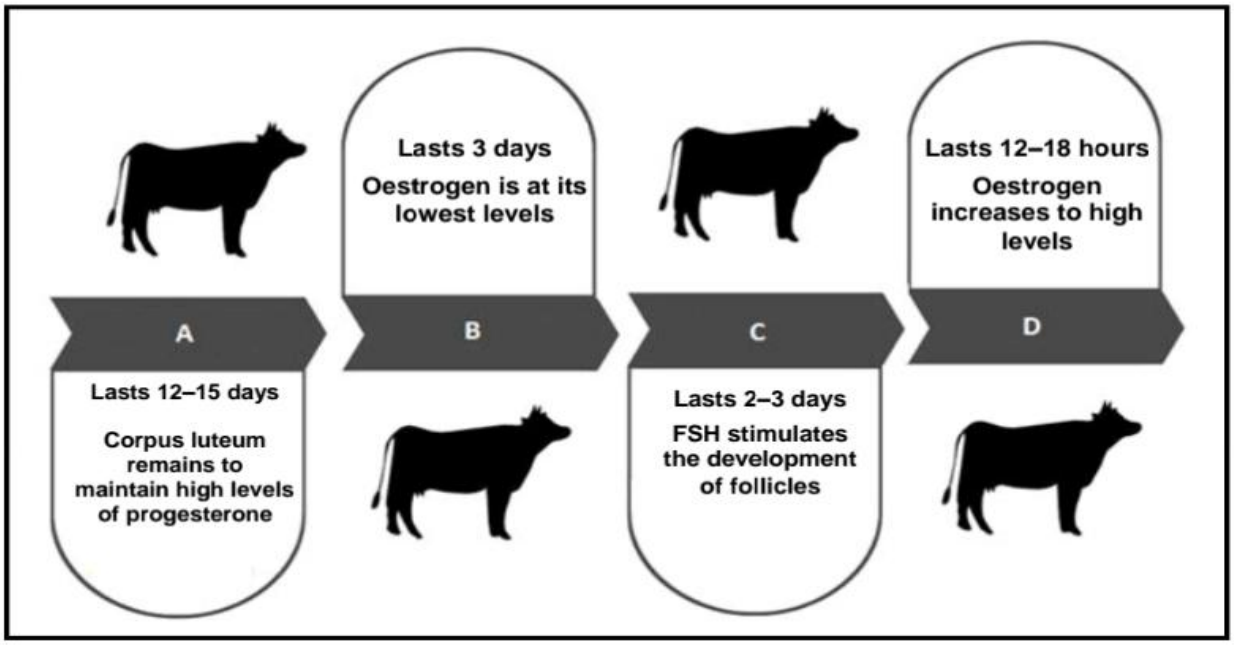
4.2.2 Indicate ONE method that farmers can use to ensure that the process named in QUESTION 4.2.1 is a success. (1)

4.2.3 Name the factor causing sterility and infertility in bulls associated with each of the following:

a) Bull has an unbalanced ration (1)

b) Young bull is raised in isolation (1)

4.3 The illustration below represents a reproductive process that takes place in a female farm animal.

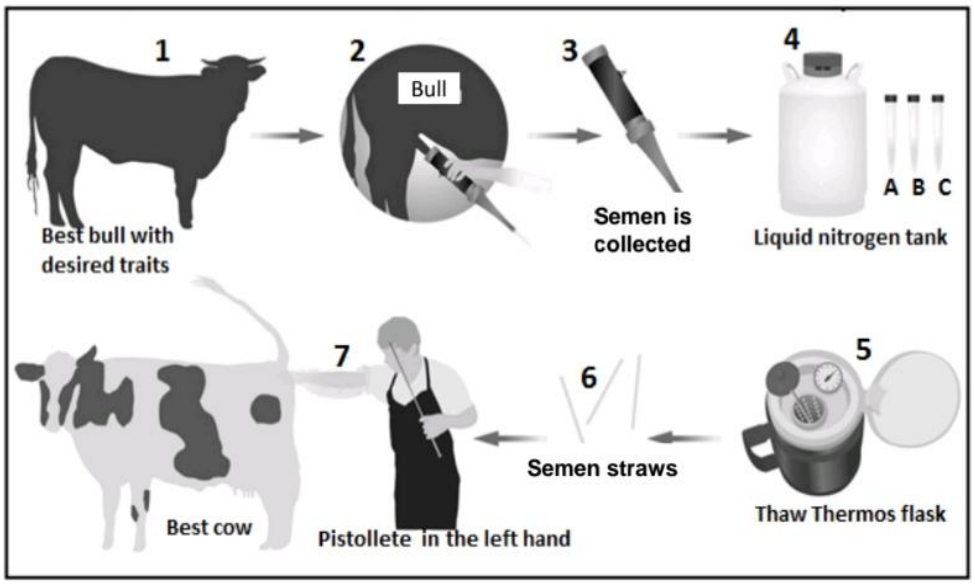


4.3.1 Identify the process illustrated above. (1)

4.3.2 Identify stages C and D of the process in QUESTION 4.3.1. (2)

4.3.3 Name ONE practical method that dairy farmers can use to identify cows on heat. (1)

4.4 The demonstration below shows a reproductive technique used by farmers to increase animal production.



4.4.1 Identify the reproductive technique in stage 7 above. (1)

4.4.2 Name the method of collection in stage 2 of the technique demonstrated above. (1)

4.4.3 Collected semen is mixed with a dilatants made up of egg yolk, milk, glycerol, buffers and antibiotics

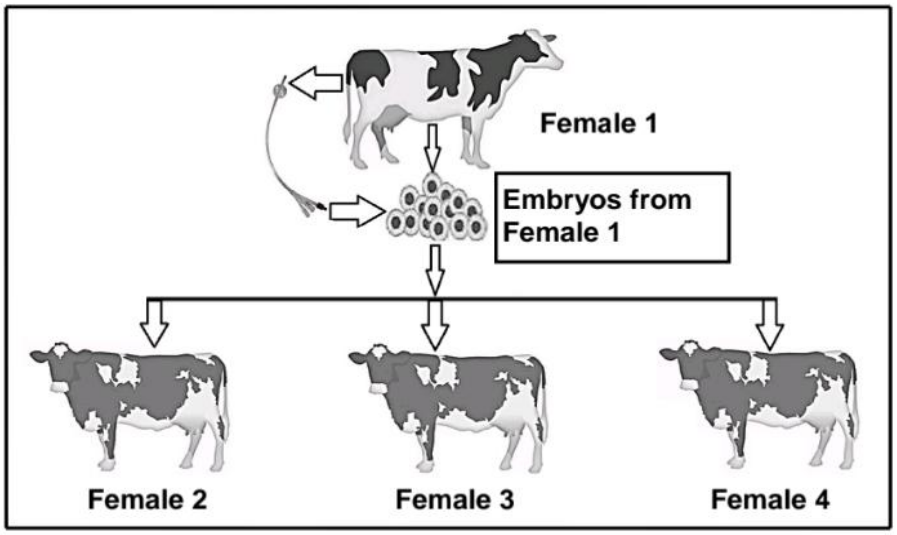
Give the role of EACH of the following substances in a dilatant:

a) Antibiotics (1)

b) Buffers (1)

c) Egg yolk (1)

4.5 The diagram below illustrates a reproductive technique in female farm animals.



4.5.1 Define the technique illustrated above. (2)

4.5.2 Give the term referring to EACH of the following farm animals:

a) Female 1 (1)

b) Females 2, 3 and 4 (1)

4.5.3 Indicate the importance of Female 1 in the technique above. (1)

4.5.4 State ONE disadvantage of the technique defined in QUESTION 4.5.1 for the farmer. (1)

4.6 Statements that apply during parturition are given below.

A. The uterus contracts to expel the placenta.
B. Vagina, cervix and uterus enlarged to form a common canal.
C. Cow lies down, head and front legs of the foetus emerge from the vulva.
D. Foetus lies with front feet pointing towards the cervix with chin resting on the front legs.

Rearrange the statements above in the correct sequence. Write only the letter (A–D) of the statement next to the question number (4.6).

(4)

4.7

Milk synthesis and milk ejection in a cow are controlled by the hormones prolactin and oxytocin respectively. Milk ejection is initiated by stimulation of the central nervous system. Milk synthesis takes 305 days after which a cow dries off before

(1)

(1)

4.7.3 State the importance of a dry period for a lactating cow. (1)

4.7.4 Name the substance in the colostrum that provides the calf with immunity against diseases. (1)

[35]

TOTAL SECTION B: (105)

GRAND TOTAL: 150