Education and Sport Development

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Departement van Onderwys en Sport Ontwikkeling
Lefapha la Thuto le Tlhabololo ya Metshameko
NORTH WEST PROVINCE

PROVINCIAL ASSESSMENT

GRADE 12

AGRICULTURAL SCIENCES

JUNE 2018

MARKS: 150

TIME: 2½ hours

This question paper consists of 12 pages

INSTRUCTIONS AND INFORMATION

1. Answer ALL the questions in the ANSWER BOOK.

2. Start EACH question from SECTION B on a NEW page.

3. Read ALL the questions carefully and answer only what is asked.

4. Number the answers correctly according to the numbering system used in this question paper.

5. Write neatly and legibly.

SECTION A

QUESTION 1

1.1 Various options are provided as possible answers to the following questions. Write down the question number (1.1.1-1.1.10) and the correct answer In the ANSWER BOOK, for exaqmple 1.1.11 D.

1.1.1 The compartments stomachs of the young calf that are dysfunctional are:-

A rumen, abomasum, reticulum
B abomasum, reticulum, omasum C
reticulum, omasum, rumen
D omasum, abomasum, rumen

1.1.2 Lobulated organ located close to the duodenum that has both an endocrine and exocrine function is
A Liver
B Pancreas
C Islets of Langerhans D
Pancreatic juice

1.1.3 is the gross energy value minus
the value of energy that is lost in the manure

A Metabolic energy
B Feed energy
C Nett energy
D Digestible energy

1.1.4 Chemical substances added to the feed of farm animals that prevent them from getting diseases that would affect their growth rate Water for agricultural purposes usually comes from

A Antibiotics
B Tranquillizers
C Hormones
D Thyroid regulators

1.1.5 A labour- saving feeding approach where farm animals have unlimited access to feeds placed in self- feeders and can feed as much as they wish:-
A Crypt feeding
B Natural grazing
C Ad- lip
D Computer control

1.1.6 To increase the production per unit area, chickens are kept in a ---------system

A Free- range
B Battery
C Deep- litter
D Backyard

1.1. 7 The phenomenon whereby testes remain in the abdominal cavity is known as ----------

A Insemination
B Embryo transfer
C Freemartin
D Cryptochidism

1.1.8 Which of the following is not a criterion of quality sperm for artificial insemination?

A more than 15% exhibit forward B
milky white colour
C less than 20% of sperms deformed D
more than 80% of sperms are mobile

1.1.9 The following applies to Newcastle disease:-

(i) A viral disease
(ii) Affects poultry of all ages
(iii) Leads to heart and kidney failure
(iv) No treatment for infected animals

Choose the correct combination

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

1.1.10 Balling gun is used to:

A give animals indication in a form of a pill B
give animals liquid
C treat internal parasites
D give injections (2 x 10) (20)

1.2 Indicate whether each of the following 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- 1.2.5) in the ANSWER BOOK, for example 1.2.6 B only.

COLUMN A			COLUMN B
1.2.1	A:	Oat meal	Contains a small percentage of total digestible nutrients and a high crude fibre
	B:	Oat straw	
1.2.2	A:	Zinc	Parakeratosis
	B:	Copper	
1.2.3	A:	Modified environment	Intensive production system
	B:	Feeding closely monitored	
1.2.4	A:	Hypoplasia	One of or both testes do not descend into the scrotum and remain in the abdominal cavity
	B:	Maturity	
1.2.5	A:	Lumpy wool	Fungal disease
	B:	Gall sickness	

(5 x 2) (10)

1.3 Give the correct term for each of the following description. Write only the term next to the question number (1.3.1 – 1.3.5) on the ANSWER BOOK.

1.3.1 Cheap nitrogen source that can be used by ruminants to synthesise protein

1.3.2 Easy targets for predators because many are not fully flighted or cannot fly higher

1.3.3 Tube that transports sperm cells from the epididymis to the urethra

1.3.4 A powerful contraction of the urethra that deposits semen into the vagina of the cow

1.3.5 Instrument used to determine the pulse and respiratory rate of farm animals (2 x 5) (10)

1.4 Change the underlined word/s in each of the following statements to make them true. Write the appropriate word next to the question number (1.4.1-1.4.5) on the answer book.

1.4.1 Swayback is caused by a deficiency of <u>iron</u>

1.4.2 Twin lambs developing from a single zygote are referred to as <u>freemartin</u>

1.4.3 An internal parasites that are narrow, long, flat and look like white ribbons are called liver fluke

1.4.4 A management practice whereby the tail is shortened is called dehorning

1.4.5 When the nerves in a cow's udder are stimulated. The physical contact causes nerve impulses that stimulate the hypothalamus to release prolactin which initiates ejection in milk (1 x 5) (5)

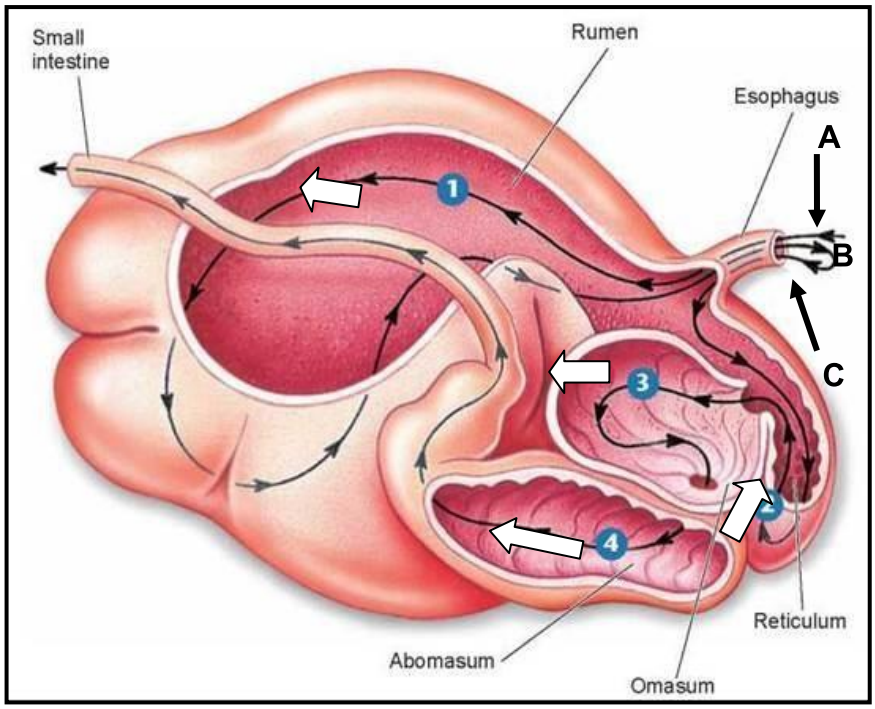
TOTAL SECTION A: [45]

SECTION B

QUESTION 2: ANIMAL NUTRITION

Start this question on a NEW page

2.1 The diagram below shows the path of food in the stomach of a farm animal.



2.1.1 Identify the type animal that has the stomach shown in the diagram.(1)

2.1.2 Deduce from the diagram the processes illustrated by arrows A, B, C. (3)

2.1.3 The alimentary canal of an adult and young animals indicated above differ. Tabulate any TWO differences. (4)

2.2 What is the difference between the end products of cellulose and that lipids? (2)

2.3

Vitamin D is a fat- soluble vitamin that is naturally present in very few foods, added to others and available as a dietary supplement. It is obtained from sun exposure, food and supplements. It promotes calcium absorption in the gut and maintains adequate serum, calcium and phosphate concentrations to enable mineralisation of bones.

2.3.1 From the extract above, identify which part of the body is mainly affected by the deficiency of Vitamin D? (1)

2.3.2 Name TWO deficiencies that are associated with lack of vitamin D in an animal body. (2)

2.3.3 Explain TWO ways on how vitamin D can be supplemented in an animal body. (2)

2.4 The table below provides information of different types of feeds and their components.

Feed	**DM %**	**DP %**	**CP %**	**TDN %**
Feed 1	15	12	14	56
Feed 2	20	3	24	30
Feed 3	89	15	11	60

2.4.1 Identify from the table above the feed with the highest protein. (1)

2.4.2 Name the type of NR for answer 2.4.1 (1)

2.4.3 Identify from the table above which feed is classified as roughage. Motivate your answer. (2)

2.4.4 A goat intakes DM of FEED 3 with average feed intake of 12kg and excretes 6kg of manure. Calculate DC. Show ALL calculations. (4)

2.4.5 Use FEED 1 and FEED 2 mixture to determine the nutritional requirements for broiler farmer by using Pearson Square method to get DP of 19%. (4)

2.5 Briefly explain how the following factors influence the digestibility of feed

(a) Age of plant (2)

(b) Quantity of feed taken in (2)

2.6 Briefly explain FOUR functions of water in animal body (4)

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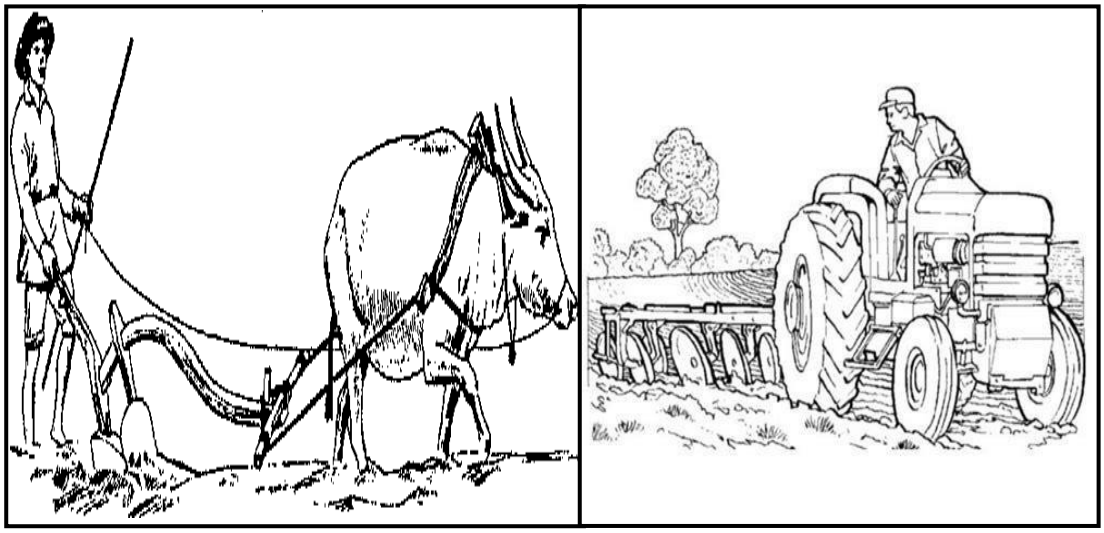
QUESTION 3: ANIMAL PRODUCTION, PROTECTION AND CONTROL

Start this question on a NEW page.

3.1 The animal farming system followed in South Africa depends on the environment and the level of management

SYSTEM A **SYSTEM B**



3.1.1 Depict from the pictures above which represents subsistence farming system. Justify your answer. (2)

3.1.2 Briefly explain TWO main differences between the farming system A and farming system B (4)

3.2 The table below represents information on the floor space required for pigs per live mass.

LIVE MASS (kg)	FLOOR SPACE REQUIRED FOR 10 PIGS (m^2)
20	14
40	22
60	30
80	37
100	42
120	47
140	53

3.2.1 Draw a bar graph to indicate the live mass of pigs and the floor space they require. (6)

3.2.2 Refer to the table and briefly explain the trend in terms of floor space required in relation to the live mass of pigs. (2)

3.3

Each farm animal should be handled in a way that is linked to its behaviour. The basic guideline when handling animals would be to handle them in a way that makes the animal calm. Ensure there are no rushed movements or loud noises, that objects are not thrown, that the animal is not injured, and that appropriate facilities and equipments are used correctly. Always keep to the safety measures for a particular animal

3.3.1 Deduce from the case study above any THREE basic guidelines when handling farm animals. (3)

3.3.2 Name any THREE types of equipment used to handle large farm animals. (3)

3.4 Describe THREE ways a farmer can use to administer medication orally to an animal. (3)

3.5 The picture below illustrates the examples of plant poisoning.

A

B

3.5.1 Label plant poisoning A and B (2)

3.5.2 Give TWO metallic poisons associated with the above mentioned plant poisoning (2)

3.6

China university of Agriculture and NWU Mafikeng joined forces on research

The two universities have partnered on a research project on the effects of aflatoxins and the development of mastitis in lactating cattle. Mastitis an inflammation of the mammary gland and udder tissue has been one of the major endemic diseases of the dairy cattle. It usually occurs as an immune response to bacterial invasion of the teat canal by variety of bacterial sources present on the farm or feed and can also occur as a result of chemical, mechanical, or thermal injury to the cow's udder. The fatal and complex disease affects and damages milk-secreting tissues and various ducts throughout the udder.

Mahikeng Mail, 18 September 2015

3.6.1 From the extract above name TWO universities that joined forces. (2)

3.6.2 Name the micro- organism that causes mastitis (1)

3.6.3 Briefly explain the effect of this disease in production (1)

3.6.4 Deduce from the extract what role did the government play in minimising the spread of this disease in the province? (2)

3.7 Name TW0 examples of internal parasite (2)

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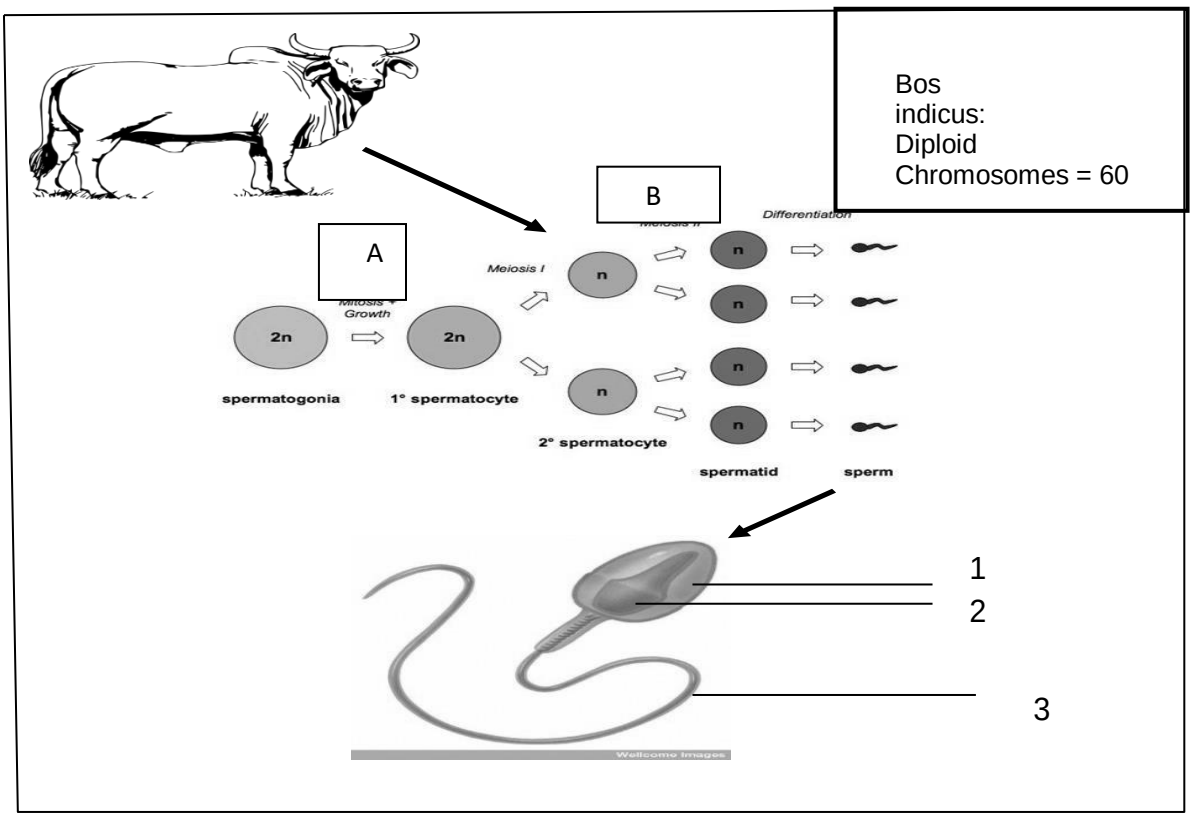
QUESTION 4: ANIMAL REPRODUCTION

Start this question on a NEW page

4.1 For the reproduction the breeder should have knowledge of the reproductive systems of the animals



4.1.1 Deduce from the picture above the name of the process visible (1)

4.1.2 Name the primary male reproductive organ where the above process occur. (1)

4.1.3 Which processes are represented by A and B? (2)

4.1.4 Identify labels for numbers 1, 2, and 3. (3)

4.1.5 How many chromosomes will the sperm cell above contain? (1)

4.1.6 Re- arrange the following hormones in sequential order from the development of the graafian follicle to lactation period.

A Progesterone

B Oxytocin

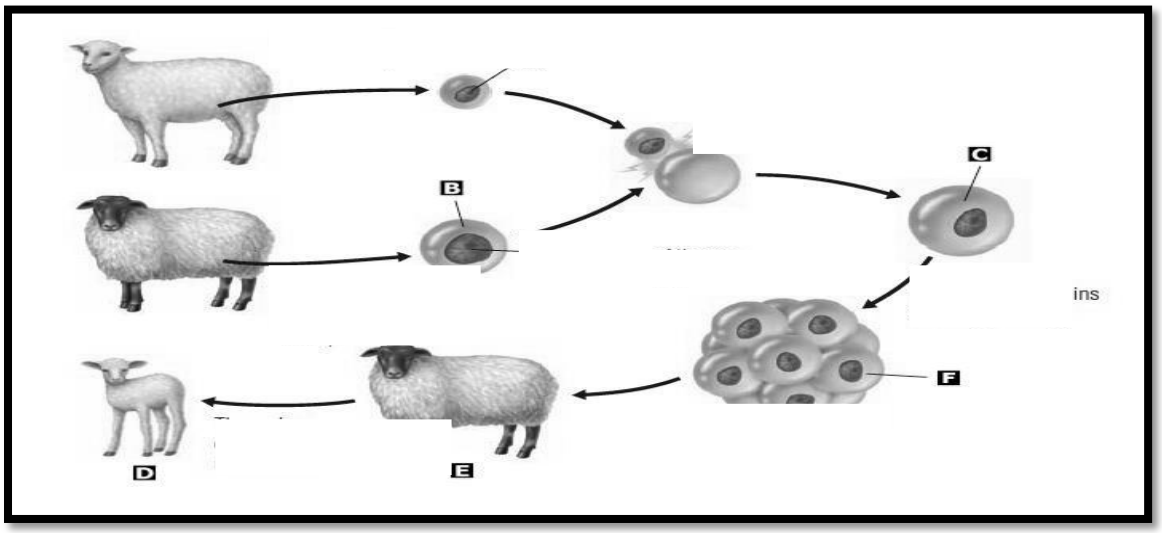
C FSH

D LT (4)

4.2 Condition encountered during pregnancy

4.2.1 Identify the condition in the photograph above. (1)
4.2.2 Describe how the condition in 4.3.1 occurs. (2)
4.2.3 Summarise any THREE causes of abortion in animals. (3)
4.2.4 Tabulate the differences between monozygotic and dizygotic twins (3)

4.3 The diagram below represents a reproductive process in sheep.



4.3.1 Identify the type of reproductive process in the diagram above. (1)
4.3.2 Define the process in QUESTION 4.4.1. (2)
4.3.3 Describe the stage represented by B (1)
4.3.4 Briefly explain TWO disadvantages of the process in QUESTION 4.4.1 (2)

4.4 When a cow shows the sign of oestrus in the morning, when do you think is the correct time for Artificial insemination? Motivate your answer. (2)

4.5 What do we call the first milk of a cow? (1)

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TOTAL SECTION B: 105
GRAND TOTAL: 150