education

Department:
Education
REPUBLIC OF SOUTH AFRICA

SENIOR CERTIFICATE EXAMINATION - 2007

AGRICULTURAL SCIENCE P2

STANDARD GRADE

FEBRUARY/MARCH 2007

802-2/2

MARKS: 150

TIME: 2 hours

802 2 2E SG

X05

This question paper consists of 10 pages.

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INSTRUCTIONS AND INFORMATION

1. Answer ALL the questions.
2. This question paper consists of TWO sections: SECTION A and SECTION B.
3. Answer ALL the questions in the agricultural science context in the ANSWER BOOK provided.
4. Number your answers exactly as the questions are numbered.
5. Start each question on a NEW page.
6. Questions may be answered in any order, but subsections of a question must be kept together.
7. Non-programmable calculators may be used.
8. Write neatly and legibly.

SECTION A

QUESTION 1

1.1 Various possible options are provided as answers for the following questions. Write only the letter (A – D) next to the question number (1.1.1 – 1.1.5) in the answer book, for example: 1.1.6 D.

1.1.1 Colostrum is the milk secreted by the mother for the first few days after birth and is rich in …

A antibodies.
B oxytoxin.
C prolactin.
D albumin. (2)

1.1.2 Protein digestion in a ruminant begins in what part of the digestive tract?

A Oesophagus
B Large intestine
C Mouth
D Abomasum (2)

1.1.3 The veld type that is usually found under high rainfall conditions:

A Sweetveld
B Sourveld
C Mixed veld
D Karoo (2)

1.1.4 In poultry, mechanical digestion occurs in the …

A mouth and gizzard.
B gizzard and crop.
C gizzard only.
D crop only. (2)

1.1.5 The system of marketing according to which the farmer's product may be marketed as the farmer wishes, is called …

A the pool system.
B controlled marketing.
C co-operative marketing.
D free marketing. (2)

1.2 Give ONE word/term for each of the following descriptions:

1.2.1 A business organisation formed by farmers to promote the buying, selling and even production of goods on a mutual basis (2)

1.2.2 The component of feed that contains carbon, hydrogen and oxygen (2)

1.2.3 The process by which the ripe follicle bursts open and the ovum is set free and collected by a funnel shape end of the fallopian tube (2)

1.2.4 The part of the ration which ensures that an animal will grow, reproduce and lactate from day to day (2)

1.2.5 The apparatus used by irrigation farmers to measure the water tension of the soil (2)

1.3 Choose a/an item/word(s) from COLUMN B that matches a/an item/word(s) in COLUMN A. Write only the letter (A – J) next to the question number (1.3.1 – 1.3.5) in the answer book, for example 1.3.6 K.

COLUMN A		COLUMN B	
1.3.1	Ceiling price	A	Limpopo Province
1.3.2	Shrub	B	highest price
1.3.3	Goitre	C	iodine
1.3.4	Infundibulum	D	implantation of embryo
1.3.5	Uterine horns	E	copper
		F	capture of ovum
		G	pregnancy
		H	Western Cape Province
		I	fertilisation of ovum
		J	lowest price

5 x 2 (10)

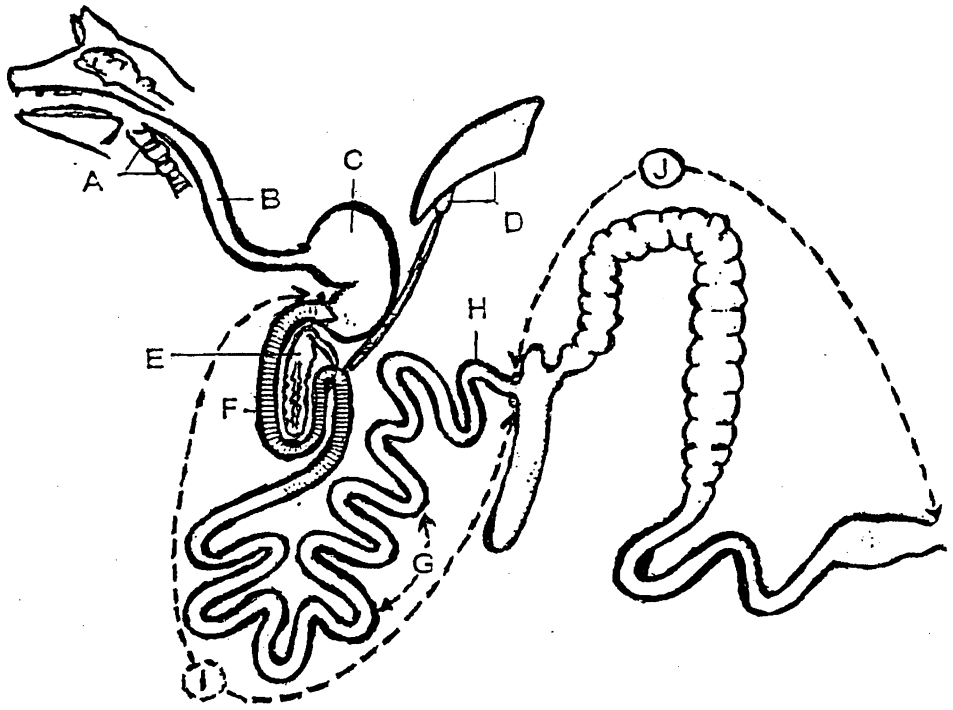
TOTAL SECTION A: 30

SECTION B

QUESTION 2: ANIMAL NUTRITION

Start this question on a NEW page.

2.1 Refer to the diagram of the digestive system of the pig and answer the questions that follow:



2.1.1 Identify the parts labelled B, C, D, E and F. (5)

2.1.2 Which digestive enzymes are secreted by the part labelled E? (3)

2.1.3 Absorption of digested feed occurs in which labelled parts of the digestive system? (2)

2.2 Explain the following types of digestion that occur in the digestive system of an animal:

2.2.1 Microbial digestion (2)

2.2.2 Chemical digestion (2)

2.2.3 Mechanical/Physical digestion (2)

2.3 Identify FOUR functions of water in the animal body. (4)

2.4 Absorption of nutrients or digested feed can take place in three different ways in the animal body. Discuss absorption under the following headings:

2.4.1 Diffusion (2)

2.4.2 Osmosis (2)

2.4.3 Active carrier molecule (2)

2.5 Calculate, using the following information, the digestible dry material content of the silage consumed by a steer:

Feed intake of the steer = 7 kg
Moisture content of the feed eaten = 30%
Amount of feed excreted = 3 kg
Moisture content of excreted feed = 20%

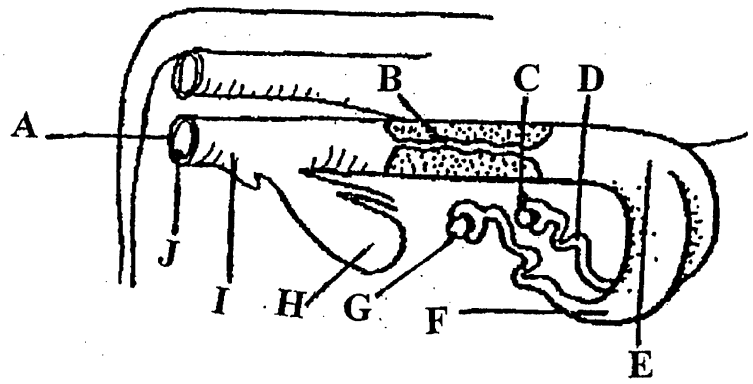
Show ALL the calculations. (5)

2.6 Calcium is a macro-mineral required by the animal body for normal growth and development. State the FOUR functions of calcium in the animal body. (4)
[35]

QUESTION 3: ANIMAL REPRODUCTION

Start this question on a NEW page.

3.1 Answer the questions based on the diagram of the reproductive organs of a cow below:



3.1.1 Indicate the letter from the above diagram of the reproductive organs of the cow where the following processes occur or organs are found:

Example: 3.1.1 (h) – M

(a) Corpus luteum produces progesterone (1)

(b) Cervix (1)

(c) Closed, except during oestrus or parturition (1)

(d) Birth canal (1)

(e) Bladder (1)

(f) Production of oestrogen (1)

3.1.2 Calving percentage (number of calves born per 100 cows per year) will decline very quickly if fertility drops in the cow herd. Such a drop in fertility can be due to a number of factors. Discuss how the following factors affect fertility in cows:

(a) Management (2)

(b) Faulty ovulation (2)

(c) Nutrition (2)

3.2 Hormones play a very important role in the sexual cycles of both the male and female. They are also essential to ensure growth and reproduction. Explain the function of the following hormones in the sexual cycles of the male and female animals:

3.2.1 Testosterone (1)

3.2.2 Relaxin (1)

3.2.3 Follicle stimulating hormone (FSH) (1)

3.2.4 Luteotropic hormone (LTH) (1)

3.3 Answer the following questions on artificial insemination (AI):

3.3.1 Artificial insemination (AI) is practised widely in the dairy industry. Give FIVE reasons why artificial insemination is practised successfully on dairy farms. (5)

3.3.2 Indicate the technique followed by farmers when doing artificial insemination of cows. (6)

3.4 Answer the following questions on cross-breeding:

3.4.1 'Cross-breeding maximises heterosis.' What is meant by this statement? (3)

3.4.2 Crossbreeding is applied to a number of animal breeding enterprises, for example beef, sheep and pigs. Indicate FIVE advantages of crossbreeding in these farming enterprises. (5)
[35]

QUESTION 4: OPTIMAL RESOURCE UTILISATION

Start this question on a NEW page.

4.1 A crop rotation system is not always recommended to crop farmers. Under which conditions can monoculture be preferred to crop rotation? Provide THREE reasons to support your statement. (3)

4.2 You have been employed by your provincial Department of Agriculture to advise farmers on the best irrigation practices/methods for their farms. Name FIVE factors you would advise farmers to take into consideration when choosing a practice/method of irrigation. (5)

4.3 Name FIVE reasons why soil is important for crop production. (5)

4.4 You have recently bought a small piece of land on which you would like to establish a vegetable garden. However, the land has been neglected for many years. Your analysis of the soil has revealed or indicated poor soil drainage as the major problem. Explain the importance (objectives) of good drainage in relation to vegetable production. (6)

4.5 Name THREE criteria to determine the quality of water for irrigation. (3)

4.6 Briefly explain THREE reasons why the veld should be rested. (3)
[25]

QUESTION 5: AGRICULTURAL ECONOMICS

Start this question on a NEW page.

5.1 Read the following case study based on agricultural economics and answer the questions that follow:

> Due to the unemployment problem in South Africa, a young lady decided to run a spaza shop in order to earn a living. She was supported by her father in erecting the building and installation of electrical facilities. Among the items she was retailing were eggs and broiler braai packs. She was later advised to buy eggs in bulk quantities so as to save on costs, and that led to the purchase of a trolley for carrying and packing goods. One of her assistants decided to store some trays of eggs with other strongly-flavoured food in the deep freezer. After ten (10) days when the eggs on the shelves at room temperature had been sold, they took the eggs out of the deep freezer. Unfortunately all the eggs were spoiled with cracks on the shells and an unpleasant odour.

5.1.1 Identify TWO examples for each of the following from the case study:

(a) Working or floating capital goods (2)

(b) Movable capital goods (2)

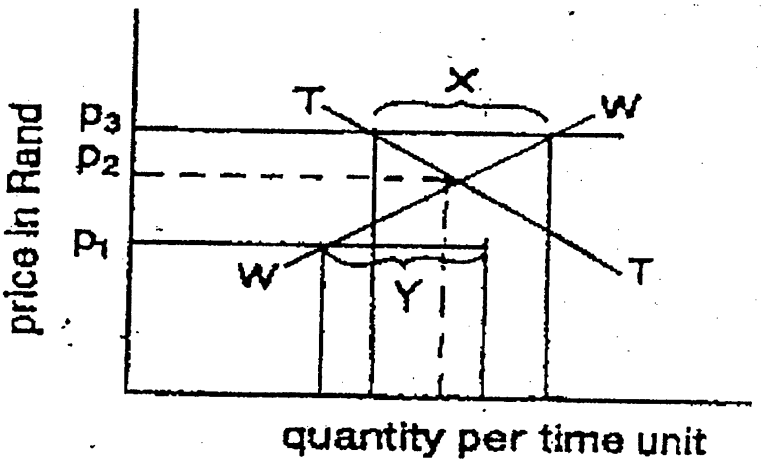
(c) Fixed capital goods (2)

5.1.2 Identify ONE problem associated with marketing of eggs as agricultural products in this case study. (2)

5.1.3 Explain how the problem identified in QUESTION 5.1.2 would affect the selling of eggs. (2)

5.2 Describe THREE types of credit that are available in agriculture, and give a suitable example in each case. (6)

5.3 Answer the following questions by referring to the hypothesised graph for marketing of agricultural products:



5.3.1 Explain what each of the following letters in the graph represents:

(a) W (1)

(b) T (1)

(c) X (1)

(d) Y (1)

5.3.2 Explain the cause of market equilibrium in the marketing of agricultural products. (2)

5.4 Name THREE channels of a free-market system in agriculture. (3)
[25]

TOTAL SECTION B: 120

GRAND TOTAL: 150