WARNING

This Question Paper MUST be returned with your answer book at the end of the Examination: otherwise marks will be lost.

Write your Examination Number here ⇨

Coimisiún na Scrúduithe Stáit
State Examinations Commission

LEAVING CERTIFICATE EXAMINATION, 2007

AGRICULTURAL SCIENCE - ORDINARY LEVEL

FRIDAY, 22 JUNE – AFTERNOON 2.00 – 4.30

For the Superintendent use only

Centre Stamp

General Directions

THERE ARE TWO SECTIONS IN THIS EXAMINATION

Section One: **Six** questions must be answered.
Each question carries 20 marks.

Section Two: **Three** questions must be answered.
Each question carries 60 marks.

Total Marks: *300 marks*

You should not spend more than 45 minutes on Section One, leaving 105 minutes for Section Two.

[OVER

Blank Page

SECTION ONE (120 marks)

Instructions

- Answer **six** questions. Each question carries **20** marks.
- Write your answers in the spaces provided.
- Keep your answers short.
- Write your examination number in the space provided on page 1.

Question 1

(a) Name **one** breed of pig. _____

(b) When bonhams (piglets) are born, a number of procedures are carried out.
Describe any **two** of these procedures.

1. _____

_____

2. _____

_____

(c) What does **creep feeding** mean? _____

_____

_____

(d) Intensive pig production involves moving animals to different houses.
Name any **two** of these houses.

1. _____

2. _____

(20 marks)

[OVER

Question 2.

Complete the following table, which gives details of the elements needed for plant growth. You must name a different fertiliser in each case.

	Nitrogen	**Phosphorus**	**Potassium**
Name of an artificial fertiliser that supplies this element			
Deficiency symptoms in plants			

(20 marks)

Question 3.

"Animal hormones are blood-borne messengers that regulate the actions of different parts of an organism"

(a) Name **two** reproductive hormones in animals.

Hormone 1. _____

Hormone 2. _____

(b) Give **one** function for each of them.

Hormone 1. _____

_____

Hormone 2. _____

_____

(c) Name the **hormone** involved in "milk let down" in animals.

_____

(d) Where in the body is the pituitary gland?

_____

(20 marks)

Question 4. Complete the spaces in the table below.

	[Oxford Scientific] 	[Foto Natura Stock / FLPA] 
Name of animal		
Phylum		
Give **one** characteristic feature of the phylum		
State **one** benefit of the animal to agriculture		

(20 marks)

Question 5.

Protection of the rural environment is a common practice in Ireland today.

(a) Give **one** reason that it is recommended not to spread nitrogen fertiliser during the non-growing season.

_____

_____

(b) Give **two** reasons that hedgerows are important in the farming landscape.

1. _____

_____

2. _____

_____

(c) Give **two** reasons for crop rotation.

1. _____

_____

2. _____

_____

(20 marks)

[OVER

Question 6.

(a) Name **three** breeds of continental beef animals.

1. _____

2. _____

3. _____

(b) State **two** benefits of using artificial insemination (AI) instead of natural service.

1. _____

2. _____

(c) Explain what tail painting is used for.

_____

_____

_____

(d) Give the length of the gestation period of a cow.

_____

(20 marks)

Question 7.

Give a scientific reason for each of the following:

(a) The inclusion of clover in a mixture of seeds for a pasture sward.

_____

_____

(b) The storage of milk in a bulk tank at 4 ^{0}C.

_____

_____

(c) Lodging of barley during the growing season.

_____

_____

(d) The feeding of hay to a calf some days after birth.

_____

_____

(20 marks)

SECTION TWO (180 marks)

Instructions

Write your answers to Section Two in your answer book.

Answer any **three** questions. Each question carries **60** marks.

Question 8.

(a) There are three major rock types, which influence soil composition.

(i) Name these **three** rock types.
(ii) In the case of **one named** rock type state how it is formed.
(iii) Give an example of the rock type you have named in (ii) above.

(b) (i) Draw a **named** soil profile and in it show **three** main horizons.
(ii) Give **one** feature that is associated with any **named** horizon.

(c) Using a diagram, describe an experiment to show that there are different sized particles in a sample of soil.

(60 marks)

Question 9.

(a) Mixed grazing of cattle and sheep is used on some farms. Give **three** benefits of using mixed grazing as a system.

(b) In farm enterprises, animals are culled.
(i) What is meant by culling?
(ii) Give **three** reasons that animals are culled.

(c) List **three** management techniques used in farming to ensure high milk yield.

(d) (i) Name any **three** constituents of milk.
(ii) Outline a laboratory method to show the presence of **one** named constituent in milk.

(60 marks)

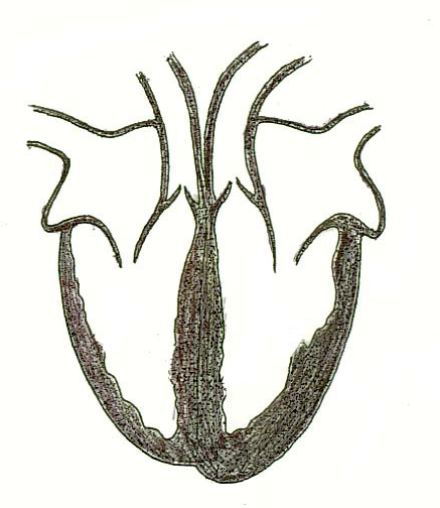
[OVER

Question 10. Answer any **two** parts (a), (b), (c). **(30, 30)**

(a) Sketch the diagram of the heart into your answer book and answer the following questions.

(i) Name the **four** main chambers in the heart and label them in your diagram.
(ii) Indicate with arrows the direction of blood flow in each chamber.
(iii) State **two** functions of the blood.

Right

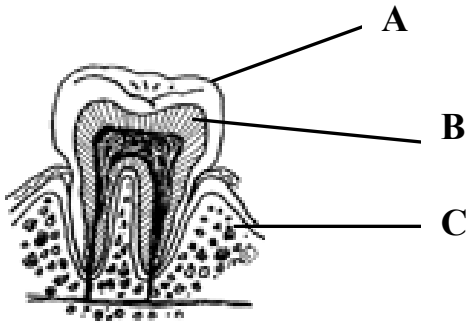


(b) The cow is said to be a <u>ruminant</u>**.**

(i) Explain the underlined word.
(ii) Briefly explain what happens in the rumen.
(iii) Name a part of the ruminant digestive system where food is absorbed.
(iv) Name **two** digestive enzymes.

(c) The diagram shows a tooth in its socket.

(i) Name the parts labelled A, B and C.
(ii) There are different types of tooth in the mouth of a pig. Name **two** types.
(iii) Give a function for each of the teeth you have named.
(iv) Give the dental formula of a pig.



(60 marks)

Question 11.

(a) Explain the following terms, as used in genetics:
- (i) gene,
- (ii) incomplete dominance,
- (iii) clone.

(b) This is an image of a chromosome.

Tim Vernon, LTH NHS Trust/Science Photo Library.

- (i) Where in a cell would you find a chromosome?
- (ii) There are 38 chromosomes in a body cell of a pig. How many chromosomes are there in a gamete of a pig?
- (iii) Bulls are rated by <u>progeny testing</u>. Explain the underlined term.

(c) In snapdragon plants yellow petal (**Y**) is dominant over purple petal (**y**).
Copy the following into your answer book and complete the spaces to outline the following crosses (genotypes in brackets, phenotypes on lines).

(i) A pure breeding plant with yellow petals was crossed with a plant with purple petals.

The genotypes of the parents	**(YY)**	X	**(yy)**
The gametes produced by each parent	**( )**	X	**( )**
The genotype of the offspring (F1)		**( )**	
The phenotype of the offspring		_____	

(ii) The offspring of the above cross were crossed with plants with purple petals.

The genotypes of the second generation parents	**( )**	X	**(yy)**
The gametes produced by each parent	**( ) ( )**	X	**( )**
The genotypes of the second generation	**( )**		**( )**
The phenotypes of the offspring	_____		_____

(60 marks)

[OVER

Question 12.

(a) Describe an experiment to find the percentage purity of a sample of barley seeds.

(b) (i) Give an example of a catch crop.
(ii) Give **three** reasons that catch crops are grown on some farms.

(c) Name **one** disease that affects a **named** root crop and describe the control of that disease.

(d) Explain how you would determine the percentage dry matter of any food in the laboratory.

(60 marks)

Question 13.

(a) Distinguish between **flushing** and **steaming up** in lowland sheep production.

(b) Describe the management of a lamb from birth to weaning.

(c) Give **two** reasons why shearing of sheep takes place.

(d) In relation to any **named** disease of sheep, describe its cause, its symptoms and its control.

(60 marks)

Blank Page

Blank Page