Cambridge IGCSE

Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

AGRICULTURE **0600/11**

Paper 1 **October/November 2014**

1 hour 45 minutes

Candidates answer Section A on the Question Paper.

Additional Materials: Answer Booklet/Paper

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
You may use an HB pencil for any diagrams or graphs.
Do not use staples, paper clips, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

Section A
Answer **all** questions.
Write your answers in the spaces provided on the Question Paper.
You are advised to spend no longer than 1 hour on Section A.

Section B
Answer any **two** questions.
Write your answers on the Answer Booklet/Paper provided.
Enter the numbers of the Section B questions you have answered in the grid below.

At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.

For Examiner's Use	
Section A	
1	
2	
3	
4	
5	
6	
7	
8	
9	
Section B	
Total	

This document consists of **20** printed pages.

CAMBRIDGE International Examinations

[Turn over

Section A

Answer **all** the questions.

1 Fig. 1.1 shows some farm tools.

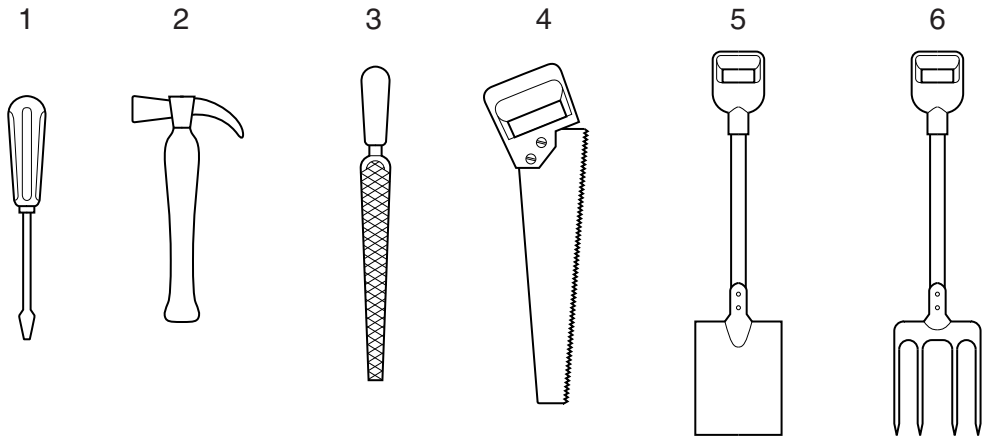


Fig. 1.1

(a) Which set of tools would be the most useful for making a fence with wooden posts and barbed wire?

A 1, 4 & 6 **B** 1, 3 & 6 **C** 2, 3 & 5 **D** 2, 4 & 5

Answer **A**, **B**, **C** or **D** ..... [1]

(b) Fig. 1.2 shows a wire mesh fence.

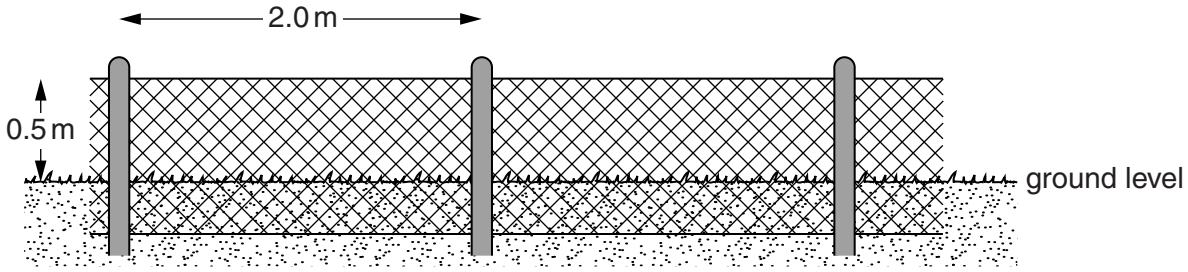


Fig. 1.2

Which type of animal could be successfully enclosed by this fence?

A cattle

B chickens

C goats

D rabbits

Answer **A**, **B**, **C** or **D** ..... [1]

(c) Fig. 1.3 shows a post and wire fence with a space for a gate.

Fig. 1.3

Draw in the space on Fig. 1.3 a gate suitable for containing large livestock.

The drawing should show

- the construction of the gate,
- how the gate is hung (attached to the post),
- how the gate is held shut. [4]

[Total: 6]

[Turn over

2 Fig. 2.1 shows Red River Farm in 2000 and 2012.

The farming enterprises that are carried out on the farm are aquaculture and goat keeping.

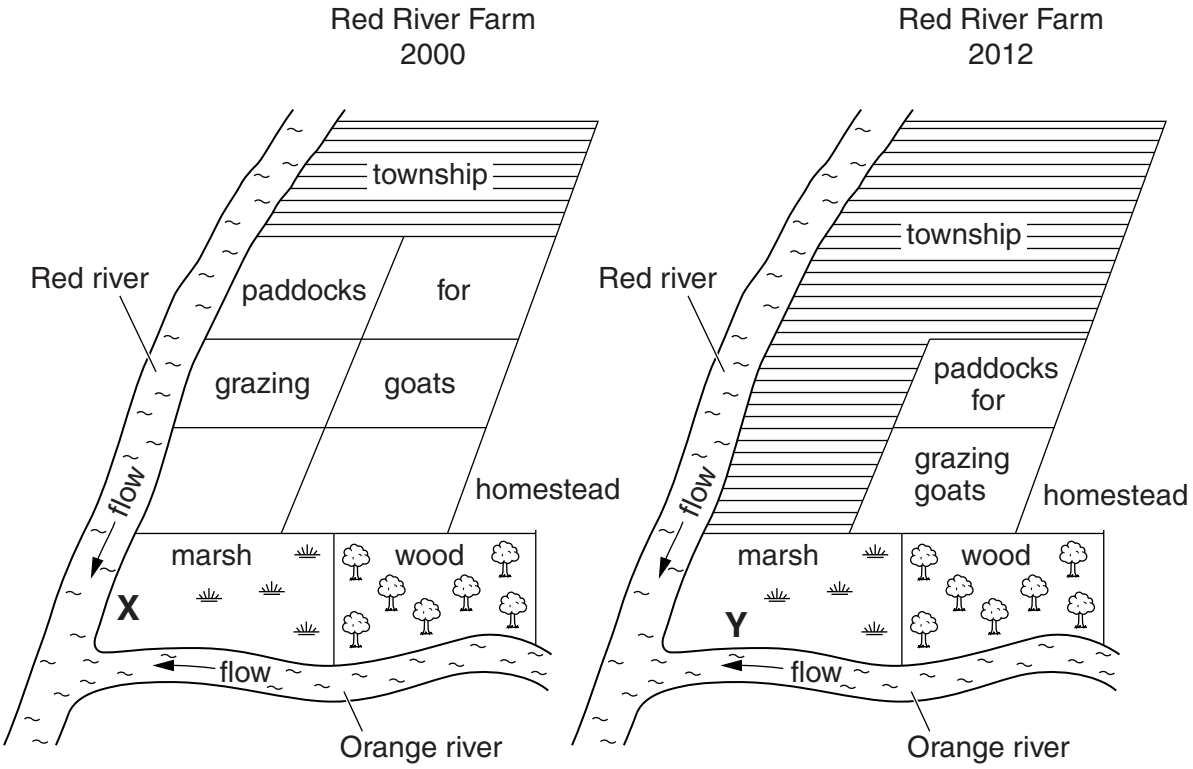


Fig. 2.1

(a) Aquaculture (fish farming) is carried out in a series of ponds on the marsh.

(i) Suggest why the marsh area is suitable for the ponds.

.....

.....[1]

(ii) Name a fish that can be farmed. ..... [1]

(iii) State two features of fish that make them suitable for farming.

1 .....

.....

2 .....

.....[2]

(iv) Fish are a good source of nutrients for humans and, when processed, for livestock.

Which of the following nutrients are fish a good source of?

A carbohydrates

B proteins

C roughage (fibre)

D water

Answer **A**, **B**, **C** or **D** ..... [1]

(v) In 2000, the ponds were supplied by a water inlet at **X** on Red river.
In 2012, the pond inlet has been relocated to **Y** on the Orange river.

Explain why the farmer considered this necessary.

.....

.....[1]

(b) In 2000, the farmer grazed 40 goats on 120 hectares in six paddocks.

By 2012, the expansion of the township had reduced the grazing for the goats to 40 hectares in two paddocks.

(i) What was the stocking density in the year 2012?

.....[1]

(ii) State two problems that might arise from the increased stocking rate in 2012.

1 .....

.....

2 .....

.....[2]

(iii) The farmer decides to reduce the stocking rate by getting rid of the woodland.

Describe the tasks that need to be done to convert the woodland to grazing.

.....

.....

.....

.....

.....

.....[3]

[Total: 12]

3 **(a)** Fig. 3.1 shows a soil profile from a pasture.

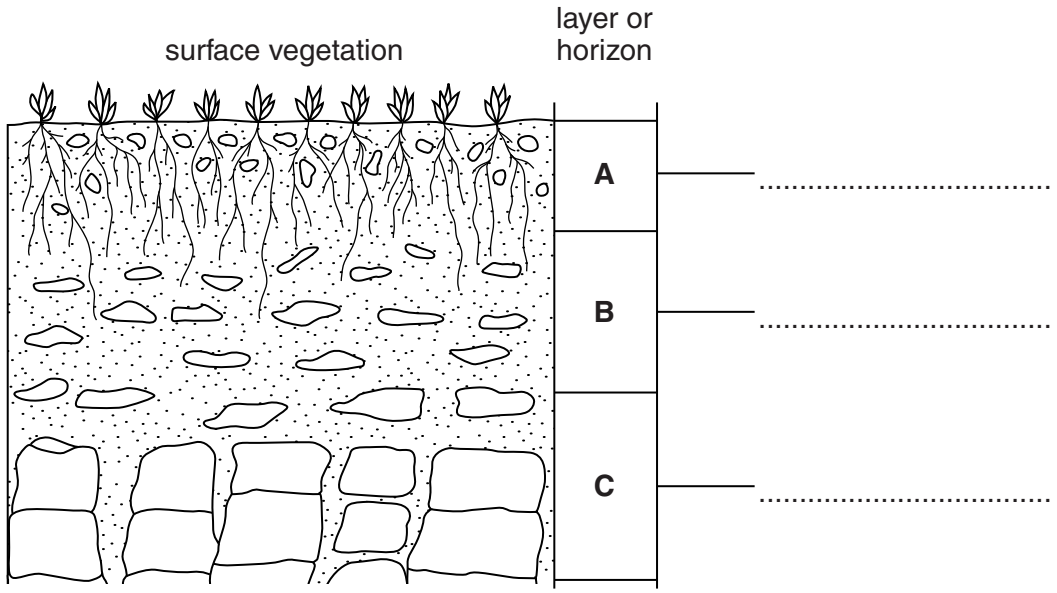


Fig. 3.1

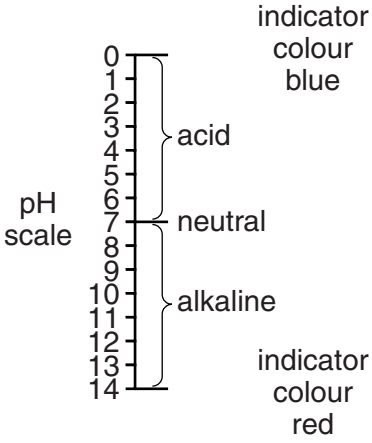
Label **A**, **B** and **C** on Fig. 3.1 with the names of each layer or horizon. [2]

(b) Pastures have different pH values which are measured on a scale of 1 to 14.

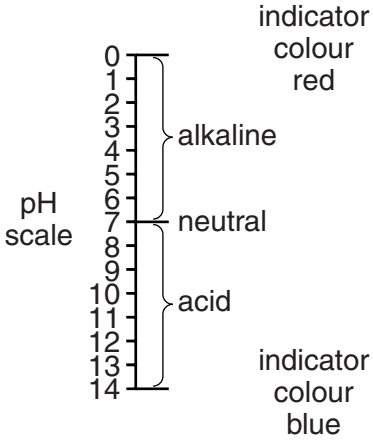
The pH can be found using either a pH meter or a soil indicator solution.

Which chart, **A**, **B**, **C** or **D**, correctly describes the pH scale?

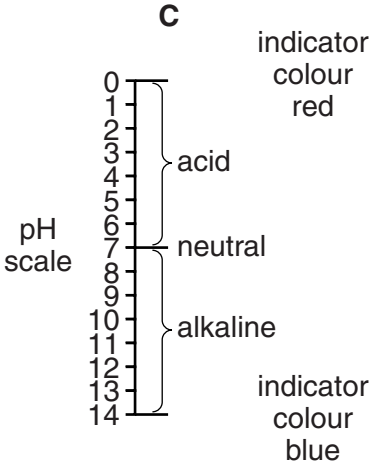
A



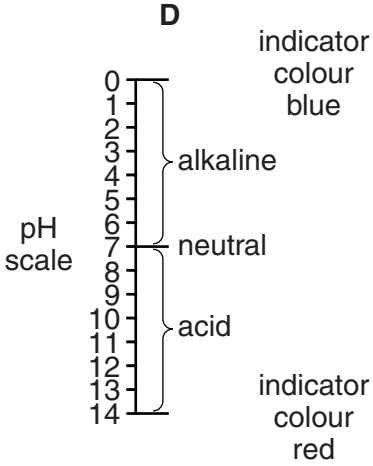
B



C



D



Answer **A**, **B**, **C** or **D** ..... [1]

(c) Fig. 3.2 represents the soil profiles in two paddocks.

The surface of each paddock was treated as follows

- paddock **1** with lime,
- paddock **2** with farmyard manure (kraal manure).

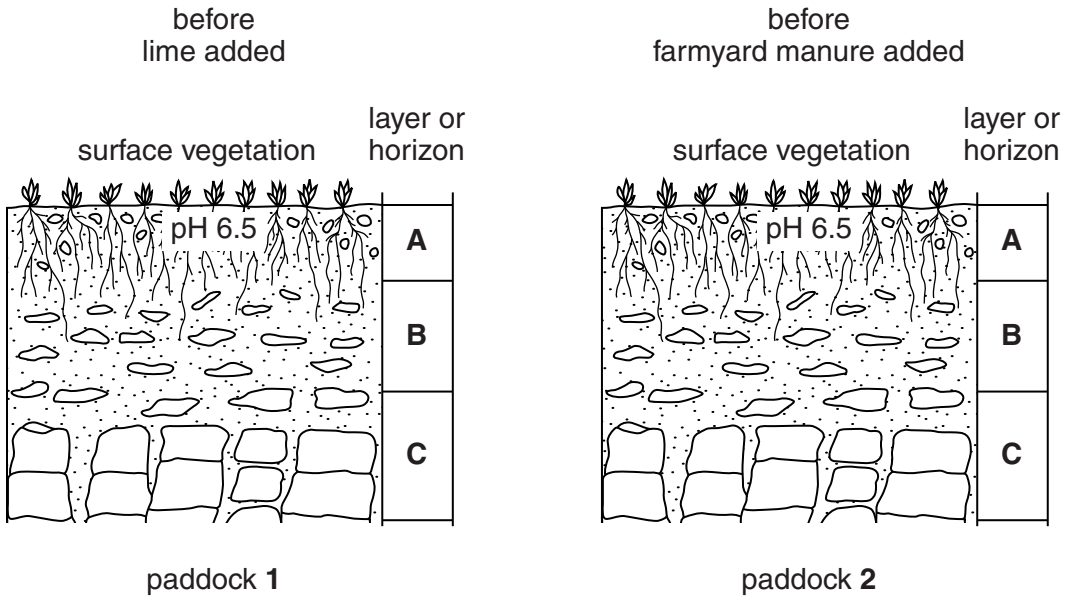


Fig. 3.2

Suggest a pH value for layer **A** in both paddocks three weeks after treatment.

Give a reason for each of your answers.

Paddock **1** pH value .....

reason .....

.....

.....

Paddock **2** pH value .....

reason .....

.....

.....[4]

[Total: 7]

4 **(a)** Fig. 4.1 shows the nitrogen cycle.

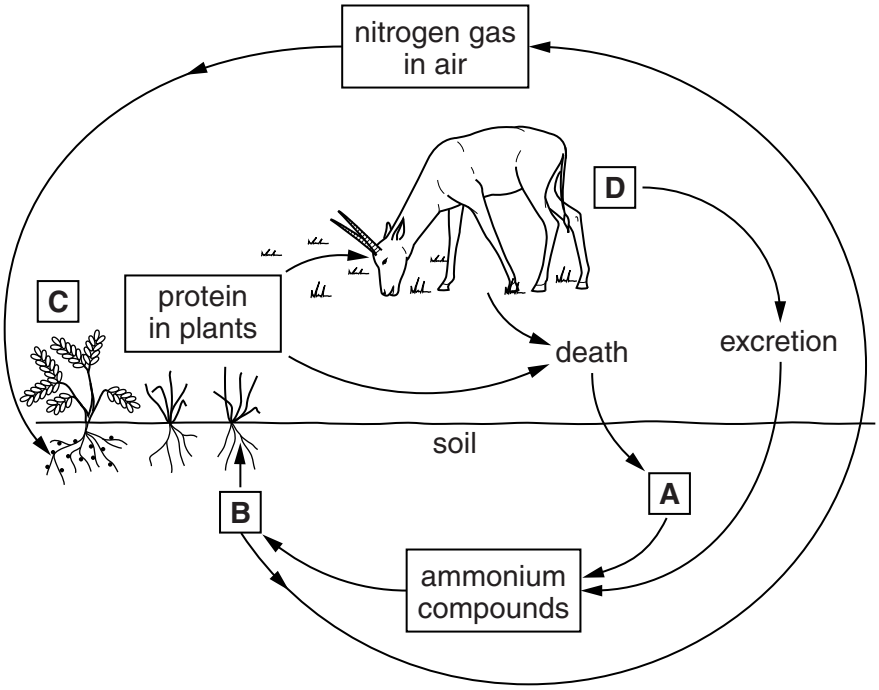


Fig. 4.1

(i) What type of organism is represented by **A**? .....[1]

(ii) What form of nitrogen is represented by **B**? .....[1]

(iii) What group of plants is represented by **C**? .....[1]

(iv) Explain the role of plant **C** in the nitrogen cycle.

.....

.....

.....

.....[2]

Some plants may lack nitrogen (**N**).

(b) Which of the following statements describes plants that lack **N**?

A green leaves and tall spindly stem

B leaves with dead spots and few fruits and flowers

C purple leaves and small roots

D yellow leaves and stunted growth

Answer **A**, **B**, **C** or **D** ..... [1]

[Total: 6]

5 Fertilisers are added to the soil to improve the yield from crops.

Table 5.1 shows the effect of adding different fertilisers to the yield of potato and wheat crops.

Table 5.1

plot	fertiliser added /kg per hectare			crop yield /tonnes per hectare	
	N	**P**	**K**	wheat	potatoes
A	0	0	0	1.7	9.5
B	96	0	0	3.7	8.3
C	0	77	107	2.0	16.7
D	96	77	107	6.6	38.6

(a) Which plot **A**, **B**, **C** or **D** was the control? .....

Explain your answer. .....

.....

.....

.....[2]

(b) What is the effect on the yield of potatoes of adding only **N** fertiliser?

.....

.....[1]

(c) Use the **data** in the table to describe the effect on the yield of wheat of adding **P** and **K**

1 without **N** .....

.....

2 with **N** .....

.....[2]

(d) A farmer pays $100 per hectare for **N** fertiliser on plot **B** and grows a wheat crop.

The wheat crop is sold for $100 per tonne.

What is the profit margin per hectare?

A $104

B $264

C $270

D $370

Answer **A**, **B**, **C** or **D** ..... [1]

[Total: 6]

[Turn over

6 Fig. 6.1 shows a simple water cycle.

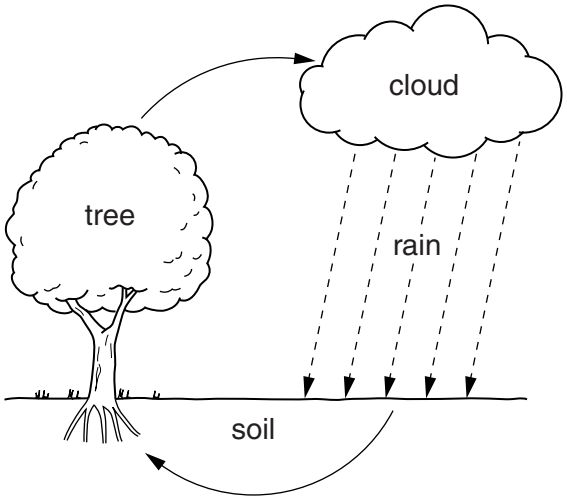


Fig. 6.1

(a) What is mainly responsible for water loss from the tree?

A condensation

B respiration

C translocation

D transpiration

Answer **A**, **B**, **C** or **D** ..... [1]

(b) List three uses of water to the tree.

1 .....

2 .....

3 .....[3]

(c) Crops such as maize require water.

However, very heavy and prolonged rain can have harmful effects.

Suggest how very heavy and prolonged rain could cause

poor germination,

.....

.....

poor pollination,

.....

.....

difficulty in harvesting.

.....

.....[3]

(d) Climatic catastrophes such as tsunami destroy crops and erode soil in their immediate path.

For several years after a tsunami the soil that was flooded by the sea does not grow good crops.

Suggest and explain why this is so.

.....

.....

.....

.....[2]

[Total: 9]

7 Fig. 7.1 shows the digestive system of a pig (non-ruminant).

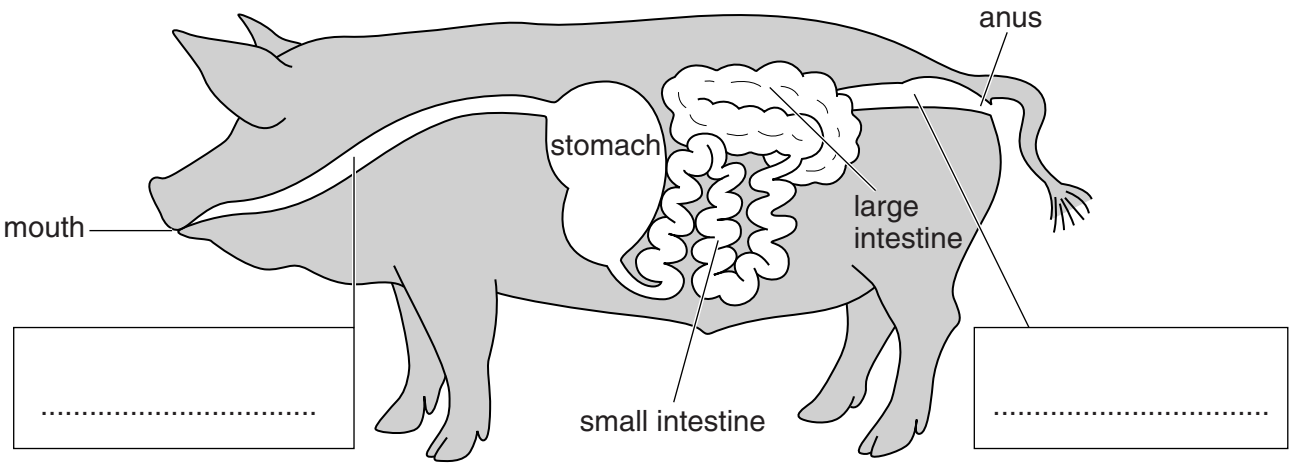


Fig. 7.1

(a) Fill in the **two** missing labels on Fig. 7.1. [2]

(b) State three functions of the mouth in a non-ruminant during feeding and digestion.

1 .....

2 .....

3 .....[3]

(c) Describe the role of the stomach and small intestine in the digestion of milk in a newborn pig.

.....

.....

.....

.....[2]

(d) If a non-ruminant is in need of a boost of energy, it is given a carbohydrate such as glucose.

If a ruminant is in need of a boost of energy, it is given a fatty acid or glycerol.

Use your knowledge of the ruminant digestive system to explain why the ruminant is given this treatment.

.....

.....

.....

.....[2]

[Total: 9]

8 Fig. 8.1 shows a Zebu cow and calf.

Fig. 8.1

The calf could have been produced by Artificial Insemination (AI).

(a) State two advantages of Artificial Insemination.

1 .....

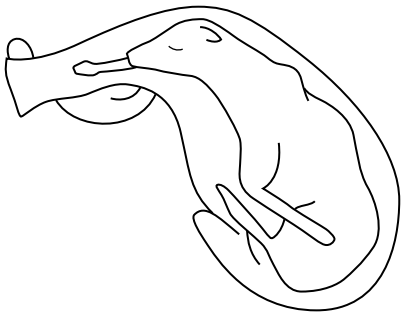
.....

2 .....

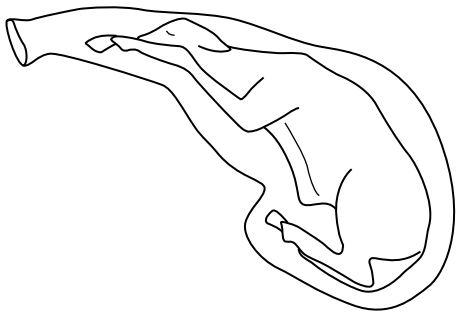
.....[2]

(b) Which drawing shows the correct position of a calf just before birth?

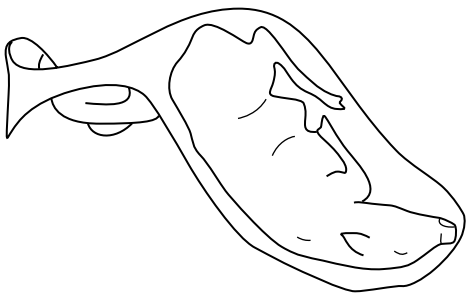
A



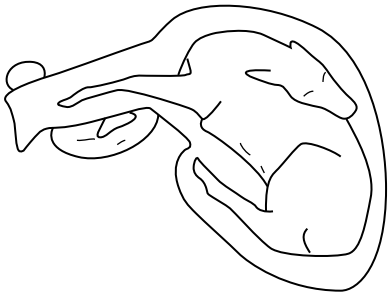
B



D



C



Answer **A**, **B**, **C** or **D** ..... [1]

(c) Once born, the calf must obtain colostrum.

Explain the importance of colostrum to the calf.

.....

.....

.....[2]

(d) Fig. 8.2 shows a 'bulldog' calf, a deformation that can occur in Dexter cattle.

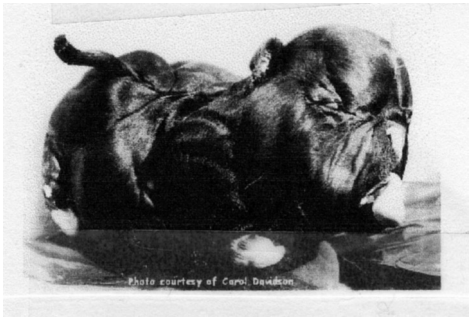
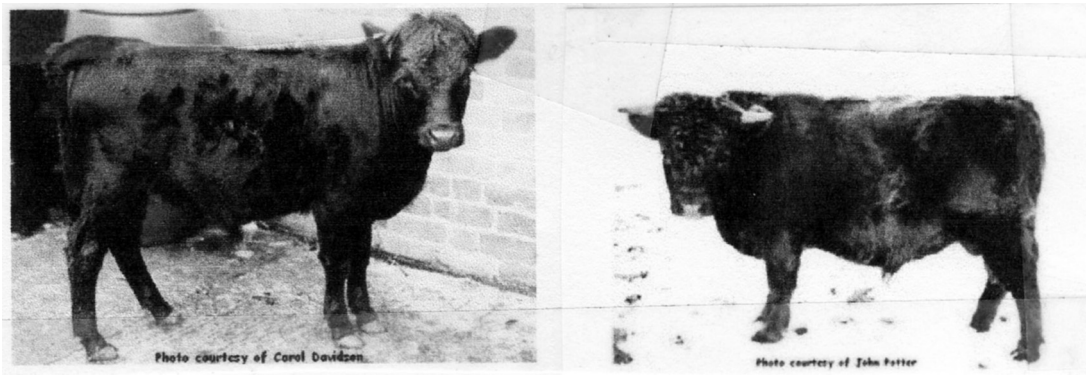


Fig. 8.2

The condition is the result of two recessive alleles, **bb**.

Fig. 8.3 shows the two types of adult Dexter cattle that exist

- a long legged type, **BB**,
- a short legged type, **Bb**.



long legged type, **BB** short legged type, **Bb**

Fig. 8.3

(i) State the genotype of parents that can produce a 'bulldog' calf.

..... X .....[1]

(ii) Using the symbols **B** and **b**, construct a genetic diagram to show the ratio of genotypes produced in the F_1 generation.

Parents X

Gametes

F_1 [3]

[Total: 9]

9 Fig. 9.1 shows the percentage yield of cereals lost to insects, weeds and disease worldwide and the percentage that is left as actual yield of cereals after these losses.

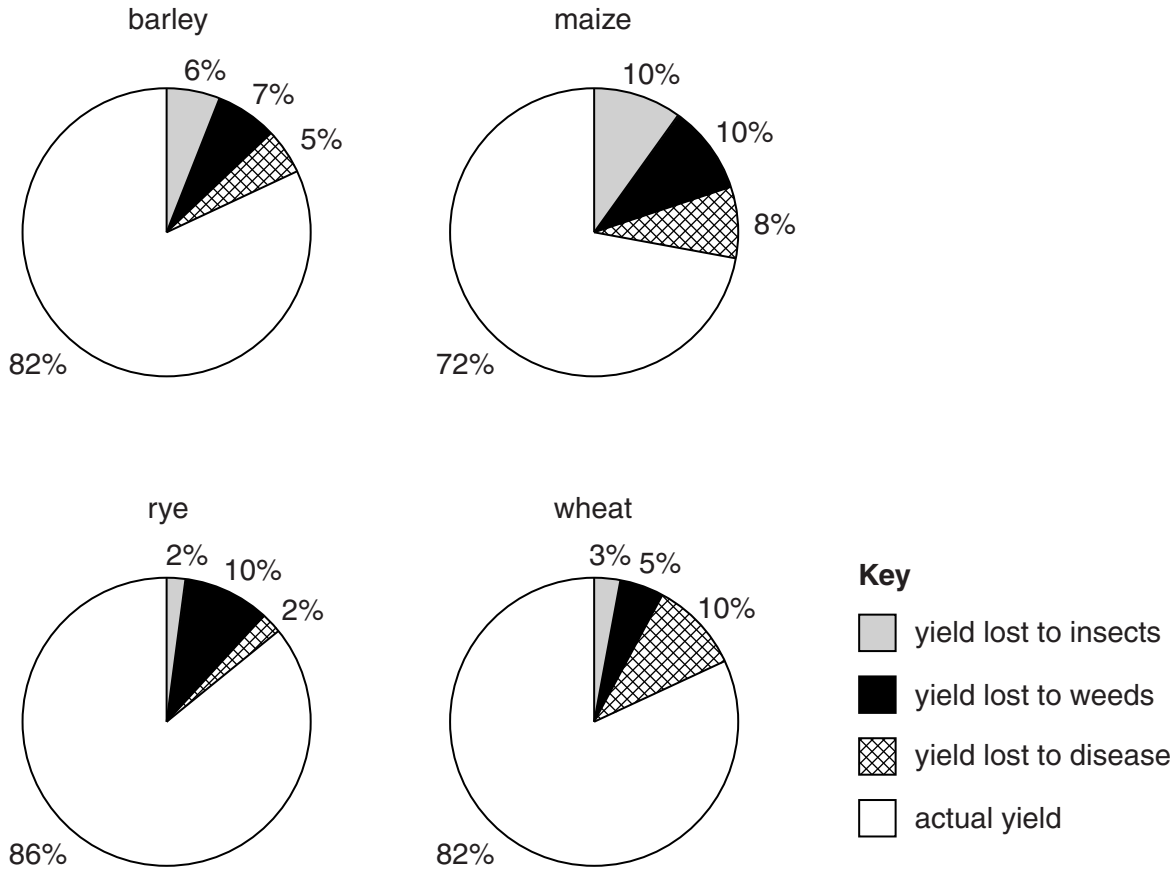


Fig. 9.1

(a) What is the cause of greatest percentage loss in cereals worldwide?

..... [1]

(b) Name a possible insect pest for one of the cereals above and explain how it reduces the yield.

cereal crop ..... insect pest .....

explanation of how yield is reduced .....

.....

.....[2]

(c) Give two ways that weeds can reduce the yield of cereals.

1 .....

2 .....[2]

(d) Suggest a reason to explain why wheat and maize lose so much more yield to disease than rye.

.....

.....[1]

[Total: 6]

Section B

Answer **two** questions.

Write your answers on the separate paper provided.

10 **(a)** Describe **one** crop rotation, giving reasons for the order of cropping. [5]

(b) Discuss the advantages and disadvantages of shifting cultivation. [5]

(c) Explain why some land may never be cultivated. [5]

11 For a **named** crop, describe

(a) the selection of suitable cultivars, [4]

(b) treatment of the crop during the growing period, [5]

(c) harvesting, storage and uses of the product. [6]

12 **(a)** Explain what is meant by *asexual reproduction*. [3]

(b) Describe the process of asexual reproduction in the Irish potato. [6]

(c) Describe the process of sexual reproduction in bean plants. [6]

13 For a **named** type of livestock

(a) describe the signs of ill health, [5]

(b) explain how disease can spread and how it can be prevented. [10]

14 **(a)** Explain how temperature and wind may affect the growth of crops. [7]

(b) Describe methods that can be used to collect water for agricultural use. [4]

(c) Describe how water in the soil can be conserved by farmers? [4]