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| Centre Number | Candidate Number | Name |
|---------------|------------------|------|

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Ordinary Level

AGRICULTURE

5038/01

Paper 1

October/November 2005

2 hours

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 a soft pencil for any diagrams, graphs or rough working.
Do not use staples, paper clips, highlighters, glue or correction fluid.

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 **three** questions.
Write your answers on the separate Answer Booklet/Paper provided.

At the end of the examination, fasten all your work securely together.
Enter the numbers of the Section B questions you have answered in the grid below.

The number of marks is given in brackets [] at the end of each question or part question.

| For Candidate's Use | For Examiner's Use |
|---------------------|--------------------|
| Section A | |
| Section B | XXXX |
| | |
| | |
| | |
| Total | |

Section A

Answer **all** the questions.

Write your answers in the spaces provided.

1 (a) Fig. 1.1 shows the reproductive system of a male mammal.

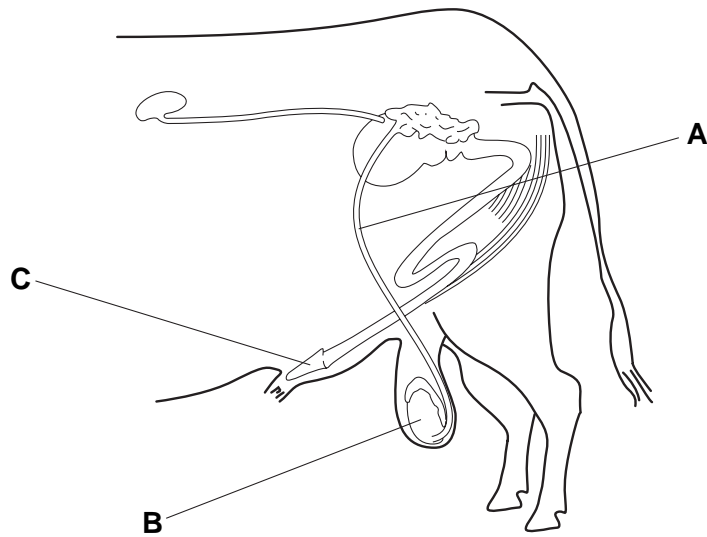


Fig. 1.1

(i) Name the parts labelled **A**, **B** and **C**.

A

B

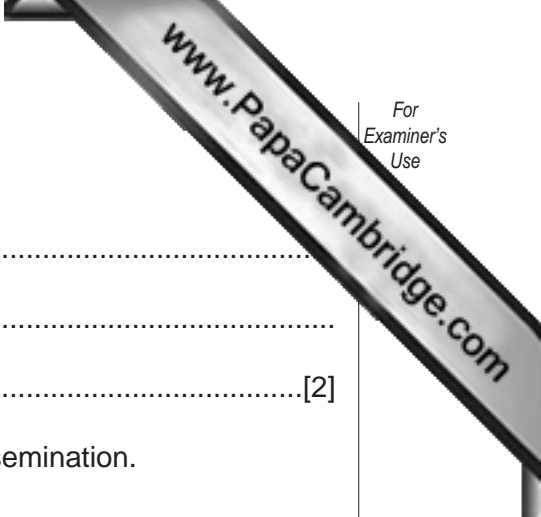
C

[3]

(ii) State **two** functions of structure **B**.

1.

2. [2]



(b) (i) Explain what is meant by *artificial insemination* (AI).

.....
.....
.....[2]

(ii) State **one** advantage, for the farmer, of using artificial insemination.

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

[Total: 8]

2 Fig. 2.1 shows part of the nitrogen cycle.

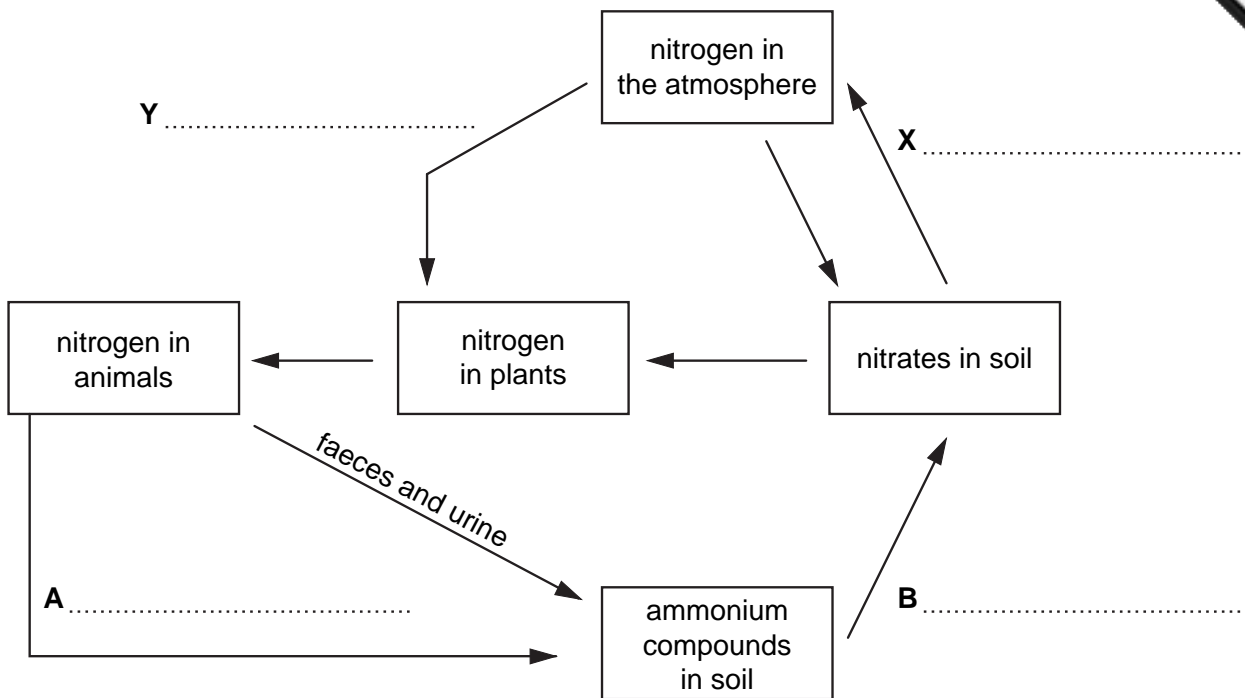


Fig. 2.1

- (a) On the diagram,
- complete label **A**, [1]
 - complete label **B**. [1]
- (b) On the diagram,
- write the name of the type of bacteria at **X**, [1]
 - write the name of the type of bacteria at **Y**. [1]
- (c) State the type of plant associated with bacteria **Y**.[1]

- (d) Fig. 2.2 shows the relationship between the nitrogen requirement of a crop and the nitrogen released by micro-organisms in the soil.

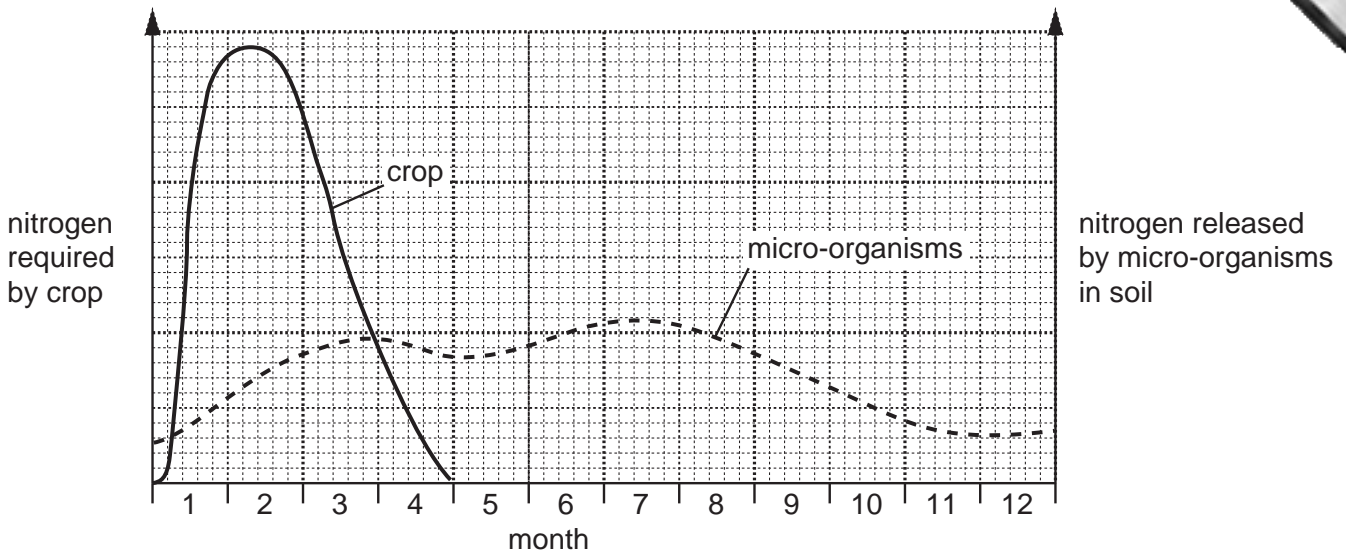


Fig. 2.2

(i) During which month does the crop require most nitrogen.
[1]

(ii) Suggest why the crop does not need nitrogen after the end of month 4.

[1]

(iii) When does the amount of nitrogen released by micro-organisms equal the amount required by the crop?
[1]

(iv) For most of the growing period, the crop needs more nitrogen than the micro-organisms release into the soil.
 Describe how the farmer can provide extra nitrogen for the crop?

[2]

[Total: 10]

- 3 Fig. 3.1 shows land which has areas showing different characteristics. Table 3.1 lists characteristics.

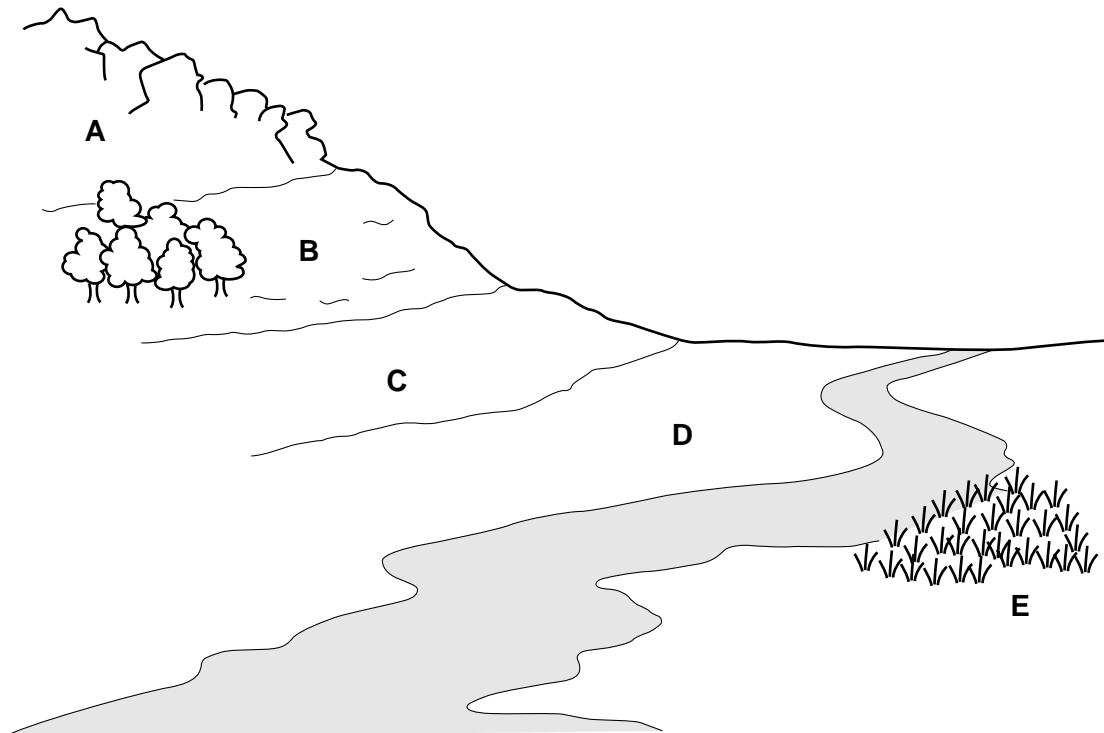


Fig. 3.1

Table 3.1

| area | characteristics |
|------|---|
| A | steep slope, rocky outcrops, very little soil |
| B | steep slope, shallow soil, areas of grass, some trees grow here |
| C | slope less steep, soil less shallow |
| D | land almost flat, deep soil, some flooding near river in the rainy season |
| E | wet, swampy land close to river |

- (a) Suggest **one** agricultural use for area B.

.....
[1]

(b) Area C is to be used for growing crops but soil erosion could be a problem.

(i) Explain why erosion is likely to increase when soil is cultivated.

.....
.....
.....
.....[3]

(ii) List **two** ways in which erosion could be reduced or prevented when growing crops.

1.
.....
2.
.....[2]

(iii) State **one** problem that could be caused by an area of wet, swampy ground on a farm.

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

(c) Fig. 3.2 is a pie chart that shows the amount of different soil particle types in a sample of soil from area D.

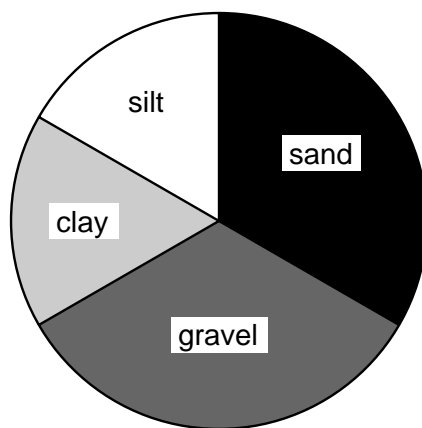


Fig. 3.2

State **one** advantage and **one** disadvantage of a soil type like that in area D.

advantage

disadvantage.....[2]

[Total: 9]

4 Fig. 4.1 shows two crops which produce tubers.

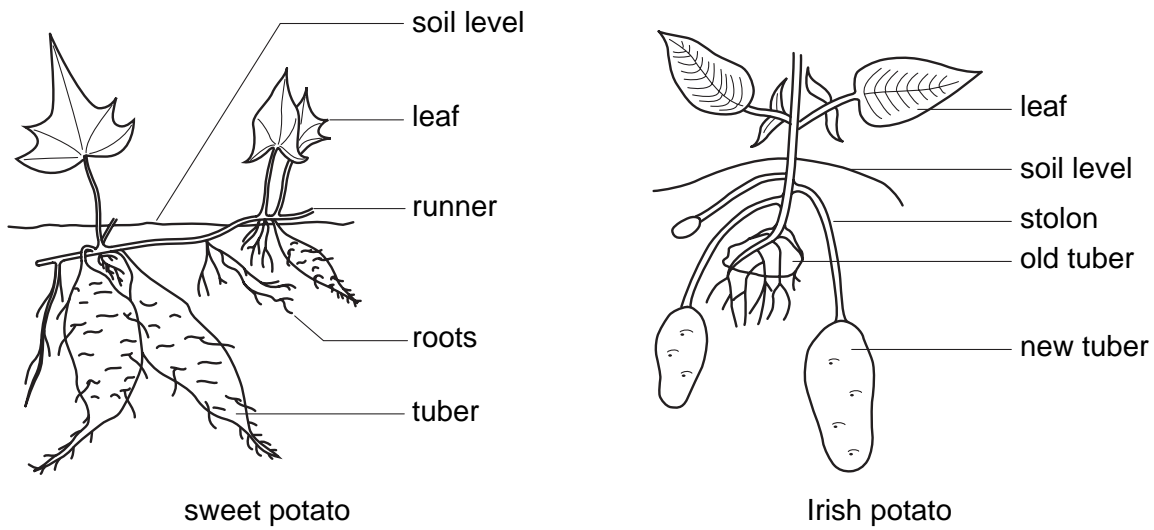


Fig. 4.1

(a) The sweet potato is a root tuber, the Irish potato is a stem tuber.

State the feature on each tuber that shows this.

feature on sweet potato

feature on Irish potato [2]

(b) The tubers act as food stores.

Outline the way in which

(i) the food is produced,

.....

(ii) the food is moved to the food stores.

..... [3]

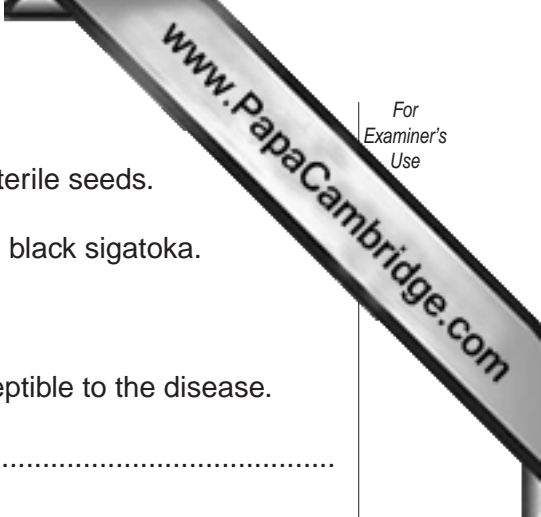
(c) The stem tuber is used to produce a new potato plant by *asexual reproduction*.

What is asexual reproduction?

.....

.....

..... [1]



(d) Bananas are usually propagated asexually as they produce sterile seeds.

Bananas of the variety Cavendish are affected by the disease black sigatoka.

This could destroy the whole population of this variety.

(i) Suggest why the whole population of this variety is susceptible to the disease.

.....
.....
.....[2]

Farmers spray the banana plants up to forty times a year to prevent the disease.

Scientists are breeding varieties of banana which are resistant to the disease.

This will reduce the need for spraying.

(ii) Suggest **one** reason why it would be an advantage to be able to reduce spraying.

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

[Total: 9]

5 Fig. 5.1 shows the mouth parts of a piercing and sucking insect.

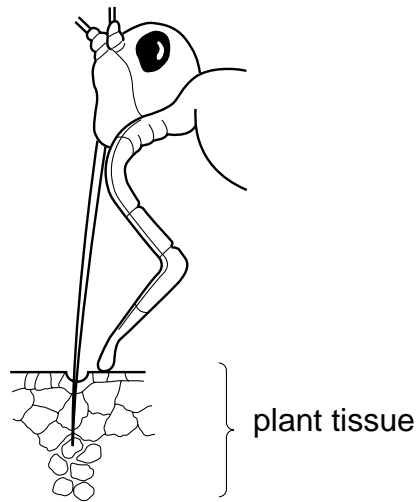


Fig. 5.1

(a) (i) Name an insect pest of crops that feeds in this way.

.....[1]

(ii) Describe and explain **two** ways in which this pest can damage crops.

1.

.....

.....

2.

.....

.....[4]

(b) Fig. 5.2 shows a section through the stem of a plant.

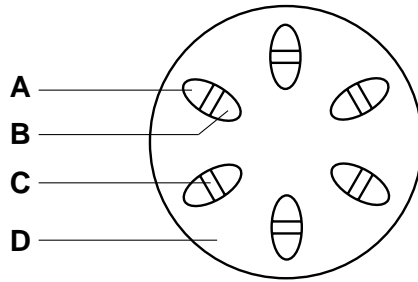


Fig. 5.2

From which tissue, **A**, **B**, **C** or **D**, does the piercing and sucking insect feed?

..... [1]

(c) (i) Some pesticides are *systemic*.

Explain what is meant by the term systemic.

.....
.....
..... [2]

(ii) Explain why a systemic pesticide is suitable for use on the insect named in (a)(i).

.....
.....
..... [2]

[Total: 10]

6 For a type of livestock animal that you have studied, complete the following.

(a) Type of livestock animal

(b) List **three** signs that the animal is in good health.

1.

2.

3.[3]

(c) (i) Name **one** disease that affects this type of livestock.

.....[1]

(ii) State **two** signs of infection by **this** disease.

.....

.....[2]

(iii) State **three** measures that can be taken to prevent an outbreak of this disease.

1.

.....

2.

.....

3.

.....[3]

[Total: 9]

Section B

Answer any **three** questions.

Write your answers on the separate answer paper provided.

Use labelled or annotated diagrams where they help to make your answers more easily understood.

- 7 (a) (i) State what is meant by the term *cultivar*.
(ii) Explain the factors that should be taken into account when deciding which cultivar to plant. [7]
- (b) For a **named** crop:
(i) state the signs that the crop is ready for harvesting;
(ii) describe the method of harvesting the crop;
(iii) describe **either** processing of the crop
or preparation of the crop for market
or conditions needed for storage. [8]
- [Total: 15]
- 8 (a) Describe, in detail, the construction of a fence to prevent animals from getting into a crop but allowing access for farm machinery. [9]
- (b) Explain the uses of hedges and fences on a farm. [6]
- [Total: 15]
- 9 (a) For a crop that you have studied,
(i) state the name of the crop,
(ii) describe, in detail, how the crop is sowed or planted. [4]
- (b) List the conditions that should be provided by livestock housing. [4]
- (c) For **either** growing a crop **or** livestock production describe the records that should be kept. [7]
- [Total: 15]

QUESTIONS 10 AND 11 ARE ON PAGE 14.

- 10 (a) (i)** Explain the importance of weed control in a crop.
- (ii)** Outline the methods by which weeds may be controlled in a crop.
- (b)** What are the reasons for using
- (i)** a mouldboard plough,
- (ii)** a harrow? [4]
- (c)** Describe the maintenance of farm equipment such as a plough or harrow. [5]
- [Total: 15]

- 11 (a)** Explain what is meant by
- (i)** carrying capacity,
- (ii)** overstocking. [4]
- (b)** Describe the processes and explain the importance of
- (i)** rotational grazing,
- (ii)** zero grazing. [11]
- [Total: 15]

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