Centre Number	Candidate Number

Candidate Name _____

CAMBRIDGE INTERNATIONAL EXAMINATIONS

Joint Examination for the School Certificate and General Certificate of Education Ordinary Level

AGRICULTURE 5038/1

PAPER 1

OCTOBER/NOVEMBER SESSION 2002

2 hours

Additional materials:
Answer paper

TIME 2 hours

INSTRUCTIONS TO CANDIDATES

Write your name, Centre number and candidate number in the spaces at the top of this page and on all separate answer paper used.

Section A

Answer **all** questions.

Write your answers in the spaces provided on the question paper.

Section B

Answer any **three** questions.

Write your answers on the separate answer paper provided.

At the end of the examination,

1. fasten all separate answer paper securely to the question paper;
2. enter the numbers of the Section B questions you have answered in the left hand column of the grid below.

INFORMATION FOR CANDIDATES

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

You are advised to spend no longer than 1 hour on Section A.

FOR EXAMINER'S USE	
Section A	
Section B	
TOTAL	

This question paper consists of 12 printed pages.

UNIVERSITY of CAMBRIDGE
Local Examinations Syndicate

[Turn over

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 farm animal.

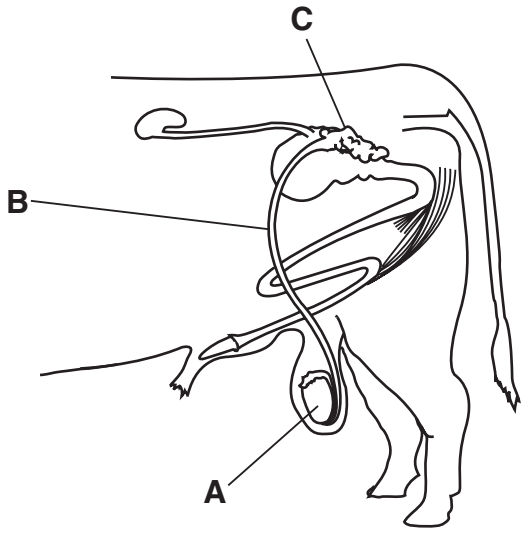

Fig. 1.1

(i) Name **A**, **B** and **C**.

A .....

B .....

C ..... [3]

(ii) What is the function of **A**?

.....[1]

(b) Fertilisation may be brought about by *artificial insemination* (AI).

(i) State two advantages of AI.

1. .....

2. .....[2]

(ii) Suggest two reasons why a farmer may choose **not** to use AI.

1. .....

2. .....[2]

[Total : 8]

2 **(a)** **(i)** State what is meant by *seed rate*.

.....

.....[1]

(ii) List three reasons why the correct spacing of crops is important.

1. .....

2. .....

3. .....[3]

(b) **(i)** When planting a crop, a farmer must decide which *cultivar* to grow.

What is a *cultivar*?

.....

.....[1]

(ii) List three things that a farmer would consider when choosing a cultivar.

1. .....

2. .....

3. .....[3]

[Total : 8]

3 Fig. 3.1 shows the amount of water available to plants in different soils.

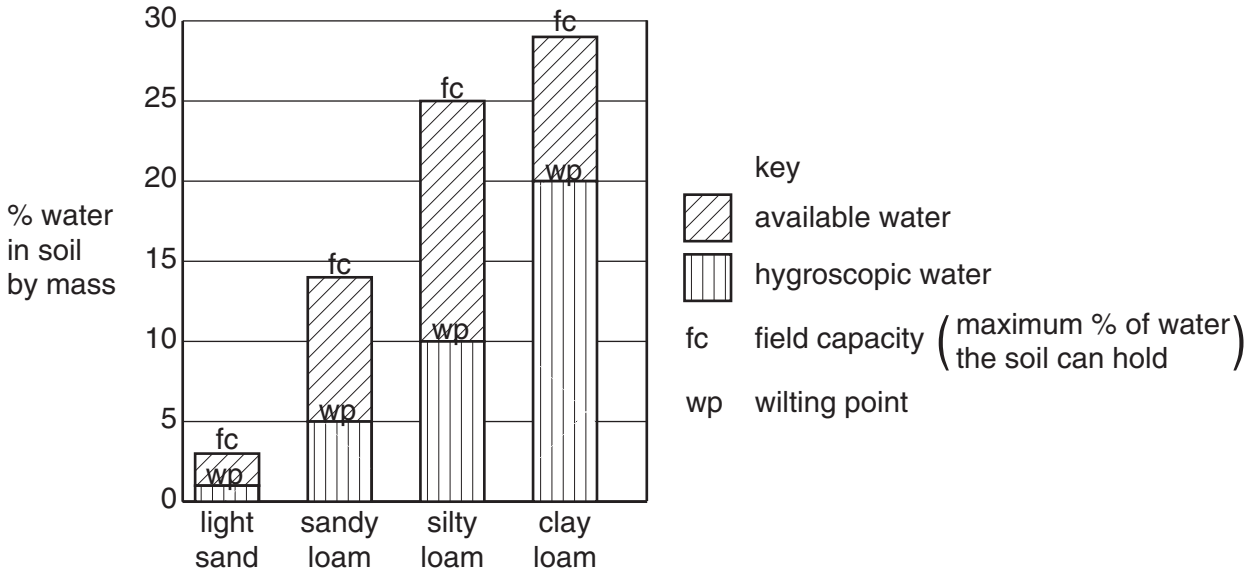

Fig. 3.1

(a) Explain why plants will begin to wilt sooner in clay loam than in silty loam.

.....

.....

.....

.....

.....[4]

(b) **(i)** Which of the soils shown in Fig. 3.1 is likely to drain most freely?

.....[1]

(ii) Apart from lack of water, state **one** other problem that is likely to affect plants growing in this type of soil.

.....

.....[1]

[Total : 6]

4 Fig. 4.1 shows the life cycle of a liver fluke, an internal parasite of cattle.

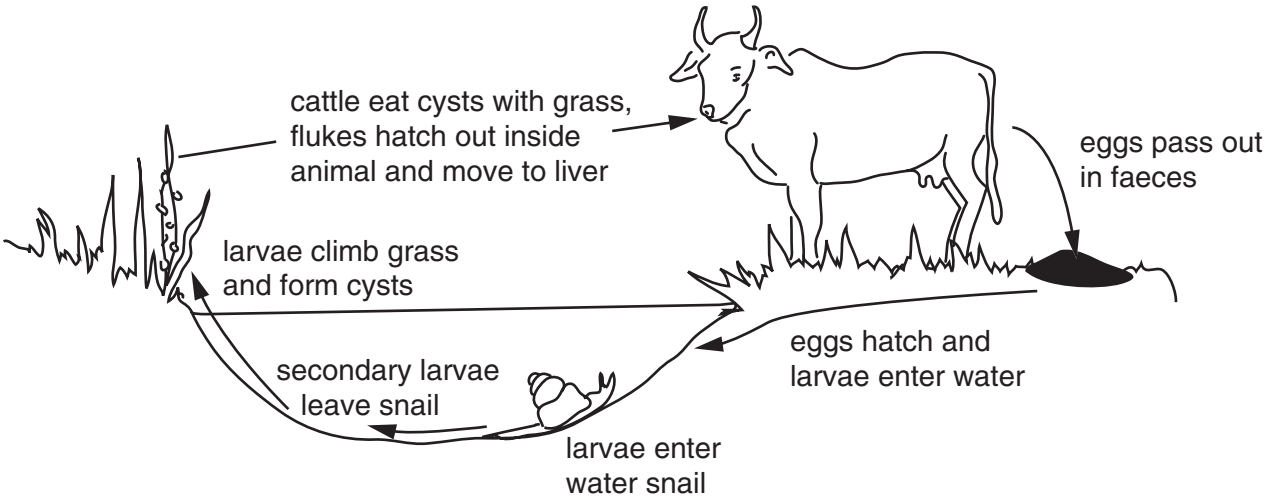

Fig. 4.1

(a) (i) A farmer can control liver fluke infestation by dosing the cattle with anthelmintics (medicine against parasites).

Why would this treatment have to be repeated at regular intervals?

.....

.....[1]

(ii) Suggest two other methods by which the liver fluke infestation might be prevented.

1. .....

2. .....[2]

(b) (i) Name a type of farm livestock and an **external** parasite that affects this animal.

livestock .....

parasite .....[1]

(ii) State two reasons why a farmer would not want this parasite on his animals.

1. .....

2. .....[2]

[Total : 6]

[Turn over

5 Fig. 5.1 shows two crops that can reproduce *asexually*.

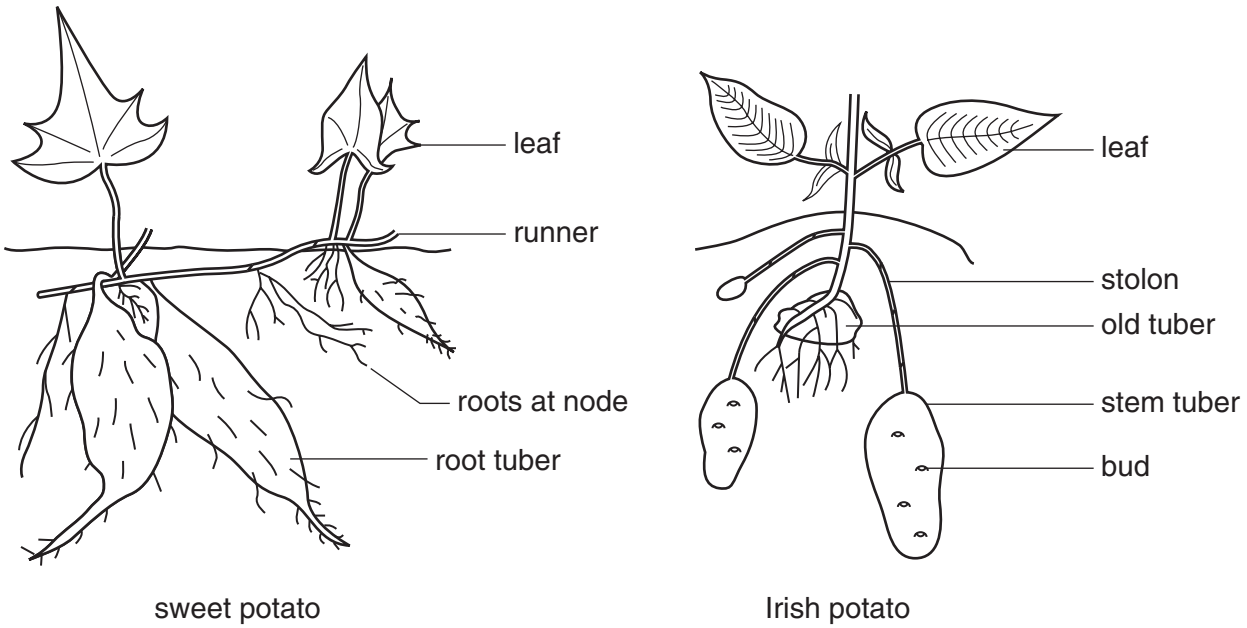

Fig. 5.1

(a) (i) Suggest which structure can be used to produce new plants from each crop, giving reasons for your answer.

sweet potato - structure .....

reason .....

Irish potato - structure.....

reason ..... [2]

(ii) How does asexual reproduction differ from sexual reproduction?

.....

.....[1]

(iii) State **one** advantage of producing plants asexually.

.....

.....[1]

(b) The sweet potato and the Irish potato store carbohydrate in tubers.

Outline the processes that result in this store of food.

.....

.....

.....[3]

[Total : 7]

6 **(a)** Fig. 6.1 shows the steps that are taken to *selectively cross-breed* two plants.

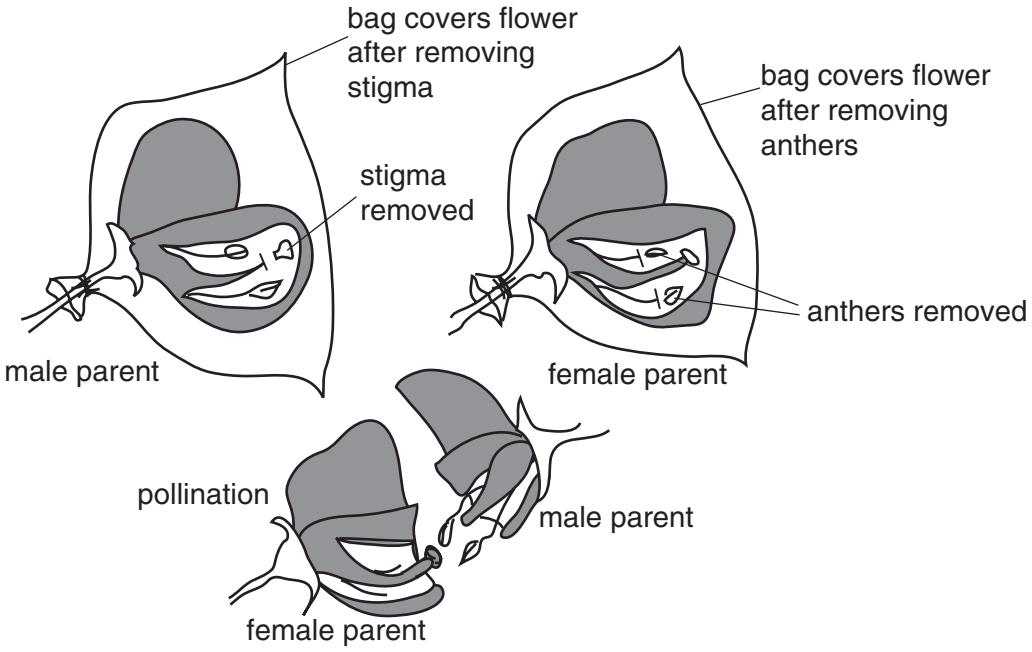

Fig. 6.1

(i) Why are the plants covered with a bag at each stage?

.....

.....[1]

(ii) What is the purpose of selective cross-breeding?

.....

.....

.....[2]

[Turn over

(b) A variety of maize carries the allele **R** that makes it disease-resistant. A pure-bred disease-resistant plant (**RR**) is crossed with a non-resistant plant (**rr**).

(i) State the genotype of the F1 generation (plants resulting from this cross).

.....[1]

(ii) If two F1 plants are crossed, what proportion of plants will be disease-resistant? (Show your working.)

proportion of disease resistant plants.....[3]

[Total : 7]

7 **(a)** Fig. 7.1 shows a section of land covered with trees and the same land when it has been cleared and crops are grown on it.

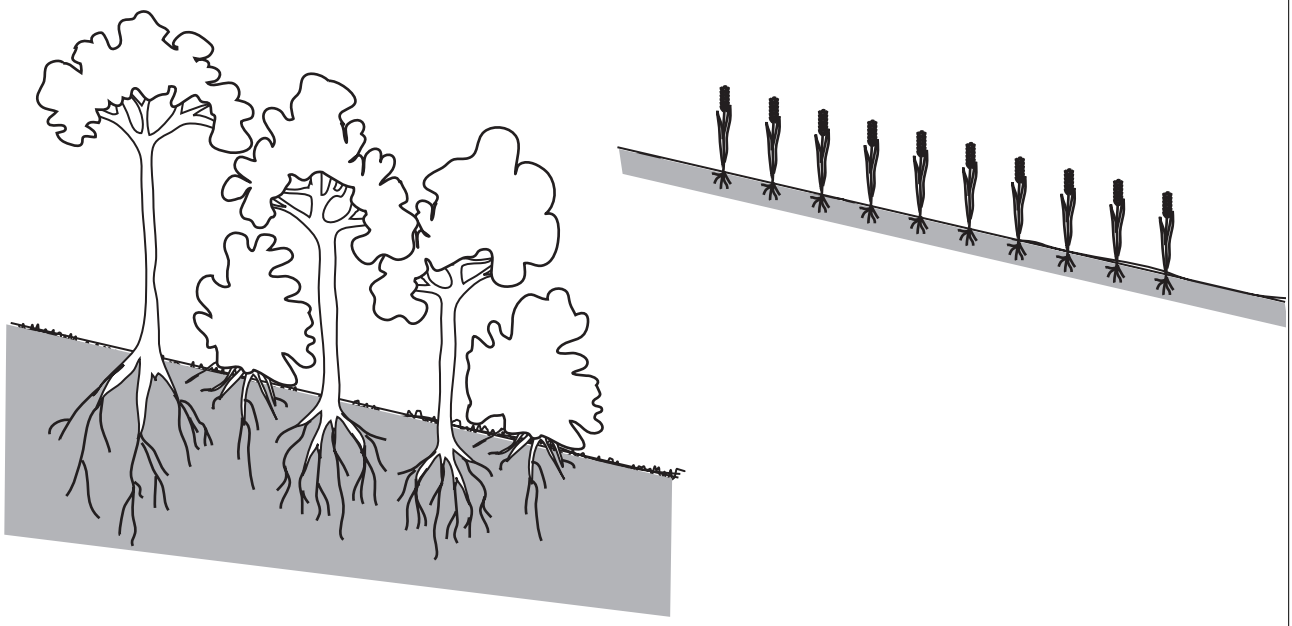

Fig. 7.1

State three reasons why there will be less soil erosion before the trees are cleared than when crops are grown.

1. .....

2. .....

3. .....[3]

(b) Building terraces on sloping land is one way of preventing soil erosion. Fig. 7.2 shows one method where a ridge is made by digging a ditch. Over several years the ridge levels out.

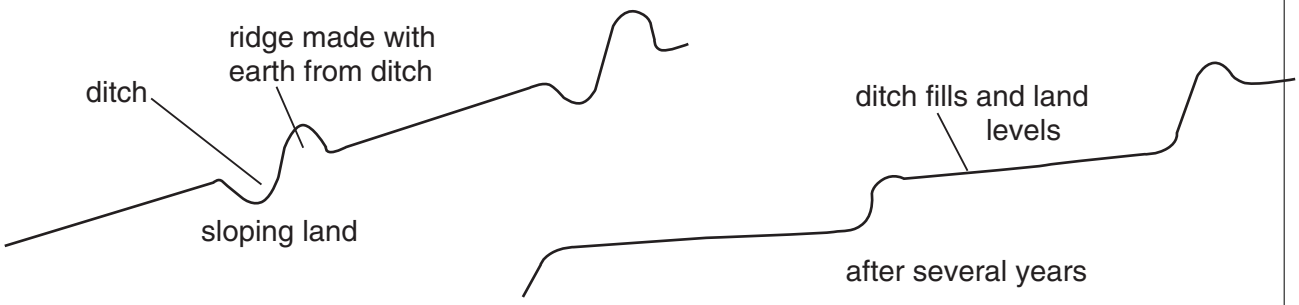

Fig. 7.2

(i) Explain why the ridge levels out.

.....

.....

.....[2]

(ii) Suggest **one** way in which the ridges could be stabilised.

.....

.....[1]

(iii) Apart from terracing, outline **one** other method of preventing erosion on a slope.

.....

.....[1]

[Total : 7]

8 **(a)** Fig. 8.1 shows a tractor moving across a slope. **X** marks the centre of gravity.

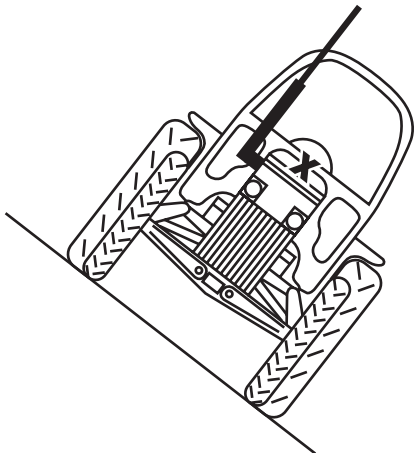

Fig. 8.1

(i) Explain why the tractor is likely to overturn.

.....

.....

.....[1]

(ii) Suggest how the design of the tractor could be changed to prevent it overturning.

.....

.....[1]

(b) Fig. 8.2 shows a small, mechanical cultivator and a plough, pulled by a tractor.

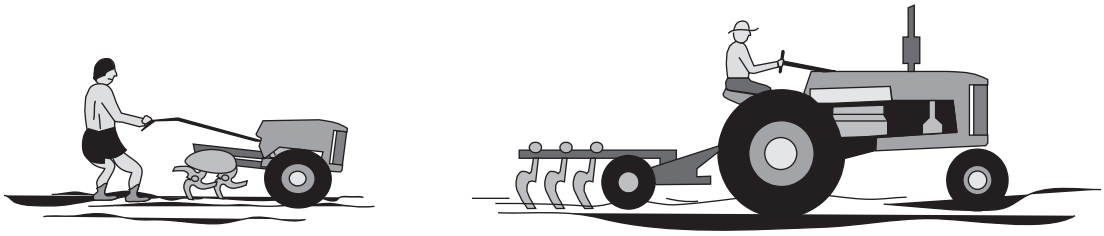

Fig. 8.2

Outline the reasons why each of these might be used for cultivation rather than the other.

small cultivator .....

.....

.....

tractor and plough .....

.....

.....[4]

[Total : 6]

Section B

Answer any **three** questions.

Write your answers on the separate answer paper provided.

9 **(a)** Outline how each of the following can affect the successful production of crops:

soil pH, soil temperature, soil structure, soil microorganisms. [8]

(b) Describe **one** method of irrigation and explain the importance of irrigation on growing crops. [7]

[Total : 15]

10 **(a)** Name a type of livestock enterprise, explain the importance of record-keeping and describe the records that should be kept. [7]

(b) Describe the actions and precautions that should be taken to avoid the outbreak of disease in livestock. [8]

[Total : 15]

11 For a **named** piercing and sucking pest of crops,

(a) outline the life-history of the pest; [6]

(b) explain why it is a serious problem for farmers; [3]

(c) describe ways of preventing and controlling outbreaks of this pest in crops. [6]

[Total : 15]

12 **(a)** Describe the sources of water that may be found on a farm and outline the purposes for which they may be used, other than irrigation. [6]

(b) Describe **three** different types of fencing that may be used on a farm and outline the purposes for which they are best suited. [9]

[Total : 15]

13 **(a)** Explain how the use of land for agriculture is determined by topography and environmental factors. [10]

(b) Explain

(i) why it is important to use land efficiently;

(ii) how research may help farmers to do this.

[5]

[Total : 15]