Centre Number	Candidate Number

Candidate Name _____

CAMBRIDGE INTERNATIONAL EXAMINATIONS

General Certificate of Education Ordinary Level

AGRICULTURE 5038/3

PAPER 3 Practical Test

MAY/JUNE SESSION 2002

1 hour 15 minutes

Candidates answer on the question paper.
Additional materials:
As listed in Instructions to Supervisors

TIME 1 hour 15 minutes

INSTRUCTIONS TO CANDIDATES

Write your name, Centre number and candidate number in the spaces at the top of this page.

Answer **all** questions.

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

Use sharp pencils for your drawings. Coloured pencils or crayons should **not** be used.

INFORMATION FOR CANDIDATES

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

FOR EXAMINER'S USE	
1	
2	
3	
TOTAL	

This question paper consists of 7 printed pages and a Supervisor's Report.

University of Cambridge
Local Examinations Syndicate

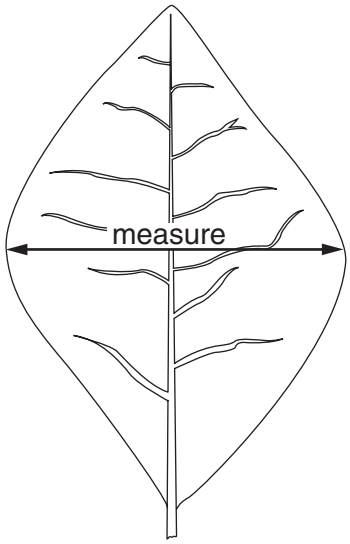
[Turn over

Answer **all** the questions.

Write your answers in the spaces provided.

1 You are provided with 25 leaves from the same plant.

(a) (i) Using a ruler, measure in mm each of the 25 leaves at their widest point, as shown in the diagram below.



Record your results in Table 1.1 showing your counting in the tally column.

Table 1.1

width of leaf / mm	tally	number of leaves
10 to 19		
20 to 29		
30 to 39		
40 to 49		
50 to 59		
greater than 60		

[3]

(ii) How many leaves are less than 40 mm wide?

.....[1]

(iii) Calculate the percentage of leaves that are less than 40 mm wide. Show your working.

.....[2]

(b) Suggest two reasons why leaves from the same plant may have different widths.

1. .....

.....

2. .....

.....[2]

[Total : 8]

2 **AS1** and **AS2** are two white powders that can be used for agricultural purposes. You are going to identify these two powders using four tests and the information in Table 2.1.

Table 2.1

Ion	Test	Test result
ammonium ions	Add sodium hydroxide solution. Warm carefully.	Ammonia produced on warming turning damp red litmus paper blue.
calcium ions	Add sodium hydroxide solution.	White precipitate, insoluble in excess.
carbonate ions	Add dilute acid.	Fizzing, carbon dioxide produced, which turns lime-water milky.
nitrate ions	Add sodium hydroxide solution, then aluminium foil. Warm carefully.	Ammonia produced on warming turning damp red litmus paper blue.
sulphate ions	Acidify with dilute hydrochloric acid, then add barium nitrate solution.	White precipitate.

(a) Test 1

- Place a small amount of **AS1** and **AS2** into separate, clean, dry test-tubes.
- Label the test-tubes.
- Add 4 cm depth of sodium hydroxide solution to each test-tube.
- Record your results and conclusions in the table below.

Keep your mixtures for Test 2.

	results	conclusions
AS1		
AS2		

[3]

(b) Test 2

- Warm each of the test-tubes from Test 1 carefully.
- Test any gas produced with damp red litmus paper.
- Record your results and conclusions in the table below.

	results	conclusions
AS1		
AS2		

[3]

(c) Test 3

- Place a small amount of **AS1** and **AS2** into separate, clean, dry test-tubes.
- Label the test-tubes.
- Add 3 cm depth of dilute hydrochloric acid to each of the tubes.
- Test any gas produced with limewater.
- Record your results and conclusions in the table below.

Keep your mixtures for Test 4.

	results	conclusions
AS1		
AS2		

[3]

(d) Test 4

- Add 3 cm depth of barium nitrate solution to each of the test-tubes from Test 3.
- Record your results and conclusions in the table below.

	results	conclusions
AS1		
AS2		

[3]

[Turn over

(e) Suggest a use for **AS2** and give a reason for your suggestion.

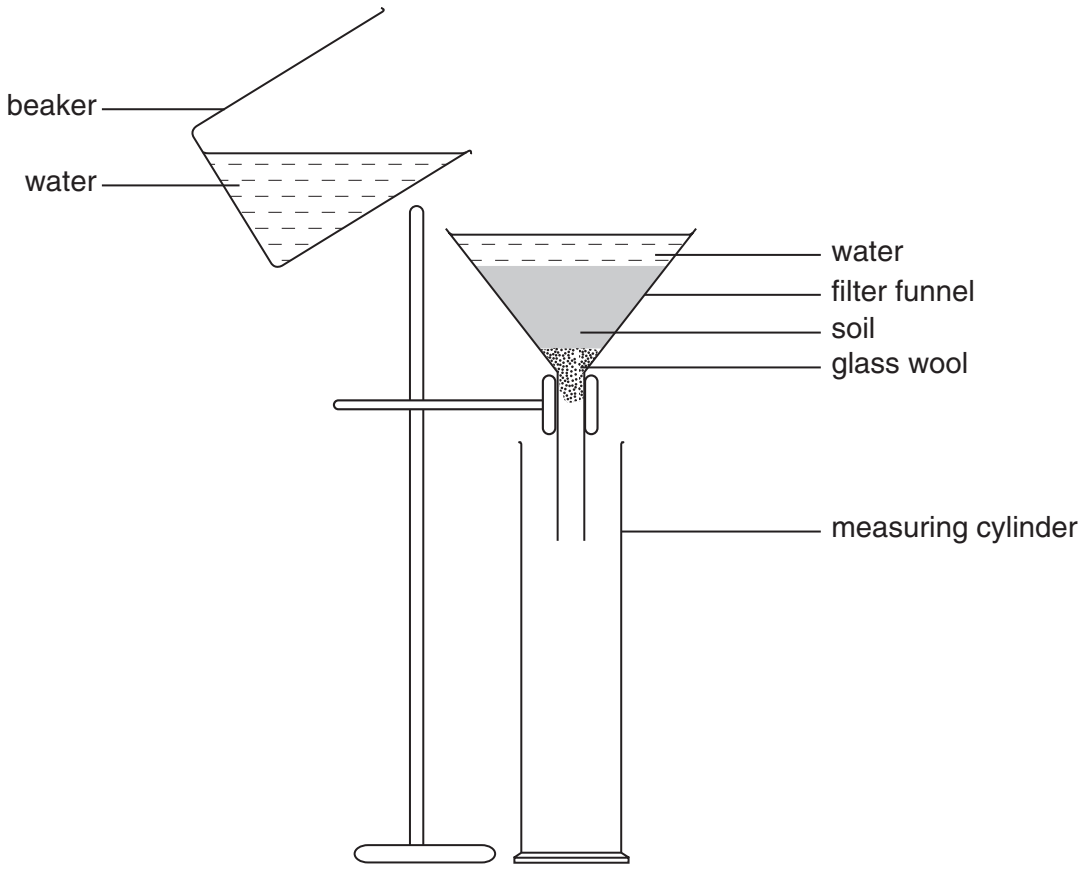
use .....

reason .....[2]

[Total : 14]

3 **AS3** and **AS4** are two samples of soil.

- Plug the stem of a filter funnel with glass wool.
- Fill the filter funnel with **AS3** to the level shown in the diagram.
- Mark the soil level on the funnel.
- Use a clamp stand, boss and clamp to hold the filter funnel above a 100 cm^3 measuring cylinder.
- Fill the rest of the funnel with water, being careful not to disturb the soil surface. Keep the funnel full of water throughout the experiment.
- Time how long it takes for 30 cm^3 of water to enter the measuring cylinder.
- Repeat the experiment using the same volume of **AS4** in place of **AS3**.



(a) Draw a table to show your results in the space below.

[3]

(b) Explain your results.

.....

.....

.....

.....

.....[4]

(c) What characteristic would be necessary in a cultivar that was to be grown in soil **AS3**?

.....

.....

.....[1]

[Total : 8]

SUPERVISOR'S REPORT

***** *The Supervisor or Teacher responsible for the subject is asked to answer the following questions.*

1 Was any difficulty experienced in providing the necessary materials? Give brief details.

2 Did the candidate experience any difficulty during the course of the examination? If so, give brief details. Reference should be made to

(a) difficulties arising from faulty specimens;

(b) accidents to apparatus or materials;

(c) any information that is likely to assist the Examiner, especially if this cannot be discovered from the scripts.

Declaration to be signed by the Principal, and completed on the top script from the Centre.

The preparation of the Practical Test has been carried out so as to fully maintain the security of the examination.

Signed.....

Centre Number ..... School.....

***Information that applies to all candidates need only be given once.**