

Centre Number	Candidate Number	Name
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UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Ordinary Level

AGRICULTURE **5038/03**

Paper 3 Practical Test October/November 2005

1 hour 15 minutes

Candidates answer on the Question Paper.
Additional Materials: As listed in Instructions to Supervisors.

READ THESE INSTRUCTIONS FIRST

Write your name, Centre number and candidate number in the spaces provided at the top of this page.
Write in dark blue or black pen in the spaces provided on the Question Paper.
You may use a soft pencil for any diagrams, graphs or rough working.
Do not use staples, paper clips, highlighters, glue or correction fluid.

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

For Examiner's Use	
1	
2	
3	
Total	

Answer **all** the questions.

Write your answers in the spaces provided.

1 You are going to investigate the effect of different concentrations of sugar solution on strips of potato.

- Take five strips of potato. Use a scalpel to make each potato strip 50 mm long.
- Place each strip in the centre of a separate petri dish as shown in Fig. 1.1.

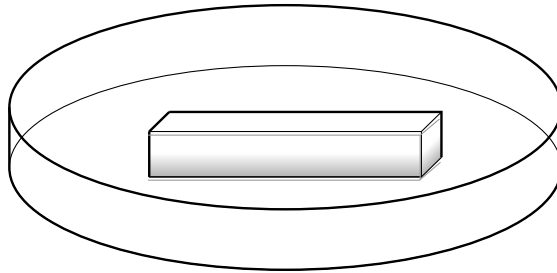


Fig. 1.1

- Label the petri dishes and then fill the dish with the solutions as described below.

petri dish number	1	2	3	4	5
solution	0% sugar solution	10% sugar solution	20% sugar solution	30% sugar solution	AS1

- Leave the petri dishes for 30 minutes.

You are advised to answer question 2 or 3 while this experiment is working.

- Remove the potato from the petri dish and measure the length of each strip.

(a) Record your results below.

petri dish	concentration of sugar solution	length of strip/mm
1	0%	
2	10%	
3	20%	
4	30%	
5	AS1	

[5]

(b) Explain the results you have observed in petri dishes **1** and **4**.

dish **1**.....

.....

.....

dish **4**.....

.....

.....[4]

(c) Why is it important that each potato strip starts the same length?

.....[1]

(d) Suggest, giving a reason for your answer, the concentration of sugar in **AS1**.

concentration %

reason

.....[2]

[Total: 12]

- 2 Calcium nitrate is an agricultural fertiliser.

You are going to perform a series of tests to identify which of two agricultural chemicals, **AS2** and **AS3** contains calcium nitrate.

Table 2.1

ion	tests	test result
ammonium	add sodium hydroxide solution, gently warm, do not allow to boil	ammonia produced
calcium	add sodium hydroxide solution	white precipitate
carbonate	add dilute hydrochloric acid	fizzing, carbon dioxide produced
nitrate	add sodium hydroxide solution then aluminium foil; warm very carefully. Do not allow to boil	ammonia produced
sulphate	add dilute hydrochloric acid then add barium chloride solution	white precipitate

- (a) Describe how you have performed the tests given in Table 2.1 to identify calcium nitrate.

.....

.....

.....

.....

.....

.....

.....[4]

- (b) (i) Describe your results of some of the tests in Table 2.2.

Table 2.2

	calcium ion test	nitrate ion test
AS2		
AS3		

[4]

- (ii) From your results, which agricultural chemical contains calcium nitrate.

.....

[1]

- (c) Calcium nitrate is very soluble in water. Suggest an advantage and a disadvantage of this to the farmer.

advantage

disadvantage.....[2]

[Total: 11]

- 3 You have been provided with two seeds, **AS4**, which have been soaked in water.
- (a) Carefully remove the outer layer of **one** of the seeds. You may need to use a scalpel to help you, but do not damage the inside.

Make a clear line drawing of the seed showing any structures you can see.

[2]

- (b) Using the scalpel, divide the other seed in half to show all of its internal structures.

Draw a large, labelled drawing of the cut section showing these internal structures.

[5]

[Total: 7]

