



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
General Certificate of Education Ordinary Level

CANDIDATE  
NAME

CENTRE  
NUMBER

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CANDIDATE  
NUMBER

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**AGRICULTURE**

**5038/03**

Paper 3 Practical Test

**October/November 2007**

**1 hour 15 minutes**

Candidate answer on the Question Paper.

Additional Materials: As listed in instructions to Supervisors

**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 or graphs.

Do not use staples, paper clips, highlighters, glue or correction fluid.

DO **NOT** WRITE IN ANY BARCODES.

Answer **all** questions.

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	
<b>1</b>	
<b>2</b>	
<b>3</b>	
<b>Total</b>	

This document consists of **6** printed pages and **1** blank page and **1** Supervisor's Report.



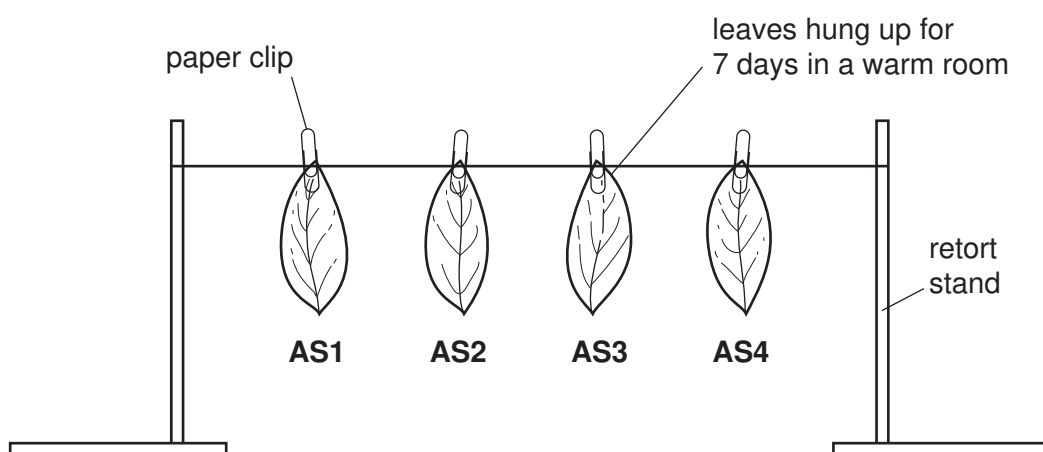
Answer **all** questions.

Write your answers in the spaces provided.

- 1 The experiment, using specimens **AS1** to **AS4** is to investigate transpiration and the distribution of stomata in a leaf.

- (a) There are four leaves labelled **AS1**, **AS2**, **AS3** and **AS4** that have been treated as in the table below.

They were all hung on a string for 7 days as shown in the diagram.



- (i) Complete the table below.

leaf	treatment	draw each leaf	describe the result
<b>AS1</b>	Vaseline coated on both sides of leaf		
<b>AS2</b>	Vaseline coated on lower surface of leaf only		
<b>AS3</b>	Vaseline coated on upper surface of leaf only		
<b>AS4</b>	No Vaseline treatment		

[4]

(ii) Explain these results in terms of water loss from leaves.

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

(b) (i) State **two** ways of reducing water loss from growing crops.

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

(ii) **AS5** is a sample of grass that weighed 20 grams. The sample has been left to dry for 6 days.

Weigh the dried sample then calculate the percentage of water lost from the sample.

Weight of grass after collection.	20g
Weight of grass after drying for 6 days.	g
Percentage of water lost from sample.	%

[2]

(iii) How could you test to see that all the water has been removed from the sample?

..... [1]

[Total 12]

2 You are going to investigate the effect of adding hydrated lime to a sample of soil. **AS6** is a sample of dry soil.

(a) (i)

- place 2 cm of soil sample **AS6** into a test tube
- add 1 spatula of Barium Sulphate
- mark a line on the test tube level with the top of the Barium Sulphate
- add distilled water to 2 cm above the line
- mark the top of the water on the side of the test tube
- add 2 cm of soil pH indicator then shake well
- allow the sample to stand in a test tube rack

(ii) Add a spatula of hydrated lime to the remaining soil sample **AS6**, use the spatula to mix the sample well. Use this sample and repeat the test as in (a)(i) above.

Use your results to complete the table below.

sample	colour of sample after it has settled	pH of sample
<b>AS6</b>		
<b>AS6 plus Lime</b>		

[4]

(iii) Why was dry soil used for these tests?

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

(iv) Name **one** other substance that could be added to the soil to raise the pH.

..... [1]

(v) Explain the advantages of adding hydrated lime to a clay soil with a low pH.

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

[Total 10]

- 3 Two different animal foods are provided as samples **AS7** and **AS8**.

Table 3.1 shows a range of food tests

	method to test a 1 cm <sup>3</sup> sample of a solution
starch	Add 3 or 4 drops of iodine solution to a sample in a test-tube
reducing sugars	Heat sample with 1cm depth of Benedicts solution in a test-tube in a water bath for 10 minutes
protein	add 1 cm depth of sodium hydroxide and 1 cm depth of copper sulphate solution to a sample in a test-tube and gently shake

Carry out the following test to find the main nutrients in the two samples of animal food.

**Test 1**

- mix a spatula of **AS7** with 2 cm depth of warm water in a clean test-tube
- add an equal amount of Benedict's solution
- carefully warm the test tube in a water bath at 90° C for 10 minutes
- take care of hot water
- record any colour change
- repeat Test 1 with **AS8**

- (i) Complete the table below with your observations and conclusions for Test 1.

animal food	observations of heating with Benedict's solution (colour change)	conclusions
<b>AS7</b>		
<b>AS8</b>		

[4]

**Test 2**

- mix a spatula of **AS7** with 2 cm depth of warm water in a clean test tube
- add 1 cm depth of aqueous sodium hydroxide and then 1cm depth of aqueous copper sulphate
- gently mix the contents of the test tube
- record any colour change
- repeat with **AS8**

(ii) Complete the table below with your results and conclusions for Test 2.

animal food	result of adding sodium hydroxide and copper sulphate	conclusions
<b>AS7</b>		
<b>AS8</b>		

[4]

**[Total 8]**



## SUPERVISOR'S REPORT

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

1 Which plant species did you use for the leaves?

.....

Was any difficulty experienced in providing the material or in its response to treatment?

Was any difficulty experienced in providing the sample of grass?

2 Were there any problems in providing soil type **AS6**?

3 Which food was sourced as **AS8** if different from recommended sample?

*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.**

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