



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 2008**

**1 hour 15 minutes**

Candidates 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, 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 |  |
|--------------------|--|
| 1                  |  |
| 2                  |  |
| 3                  |  |
| Total              |  |

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



Answer **all** the questions.

Write your answers in the spaces provided.

- 1 Eye protection must be used for this experiment.

You are provided with **two** leaves labelled **AS1** and **AS2**.

**AS1** has been exposed to bright light in a warm room for 48 hours.

**AS2** has been kept in a dark cupboard in the same room for 48 hours.

**AS2** has a V shape cut into it to distinguish it from **AS1**.

Both leaves were picked less than one hour ago.

- Pour 200 cm<sup>3</sup> of hot water into a 250 cm<sup>3</sup> beaker.
- Heat beaker to bring water to the boil.
- Add **AS1** and **AS2** and boil them for five minutes.
- Remove the leaves and lay them on a white tile.
- Gently press **AS1** and **AS2** with a spatula to help break open cells.
- Place the leaves into separate boiling tubes.
- TURN OFF THE HEAT SOURCE.
- Add sufficient ethanol to cover the leaves.
- Return the boiling tubes to the beaker of boiled water (the ethanol should start to boil).
- Leave until **AS1** and **AS2** turn white (about 3 minutes).
- Pour away the ethanol into the container provided.
- Dip the leaves in the beaker of boiled water (this softens the leaves).
- Lay the leaves on a white tile.
- Cover **AS1** and **AS2** with **excess** iodine solution.
- Gently tap the leaves about 5 times with a spatula.

- (a) Describe the appearance of **AS1** and **AS2**.

**AS1** .....

.....

**AS2** .....

..... [2]

- (b) (i) What conclusion do you draw from this test?

.....

..... [1]

- (ii) What did the experiment show was needed for photosynthesis?

.....

..... [1]

(c) (i) Why was chlorophyll first removed by boiling the leaves in ethanol?

.....  
 .....

(ii) Why was it necessary to turn off the heat source before heating the ethanol?

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

(iii) The plants from which **AS1** and **AS2** were taken were exposed to different light conditions. Give **two** other environmental conditions which should have been kept the same for the two plants, to ensure it was a fair test.

Condition one .....  
 .....

Condition two .....  
 ..... [2]

(d) List **four** ways that plants use the products of photosynthesis.

.....  
 .....  
 .....  
 ..... [4]

[Total: 12]

- 2 You are provided with **three** samples of water, **AS3 AS4** and **AS5**, they come from local sources. It is feared that recent heavy rainfall may have polluted these sources ammonia. The local hospital is concerned that the water provided is free of ammonia.

The table below shows a wet test and the result for ammonium ions.

| Ion      | Test                                            | Test result                                                     |
|----------|-------------------------------------------------|-----------------------------------------------------------------|
| Ammonium | Add sodium hydroxide solution<br>Warm carefully | Ammonia produced on warming, turning damp red litmus paper blue |

- (a) Test **AS3**, **AS4** and **AS5** for the presence of ammonium ions and record your result below.

| Sample     | result of ammonium test |
|------------|-------------------------|
| <b>AS3</b> |                         |
| <b>AS4</b> |                         |
| <b>AS5</b> |                         |

Which sample(s) would not be suitable for use in the hospital?

..... [4]

- (b) When testing for ammonium ions describe **two** precautions needed to ensure fair comparisons.

Precaution 1 .....

.....

Precaution 2 .....

..... [2]

5

- (c) Bad farming practices can result in water pollution.  
Suggest with a reason, **one** way to prevent ammonia polluting water supplies.

.....

.....

.....

..... [2]

[Total: 8]

- 3 (a) You are provided with a flower, **AS6**.

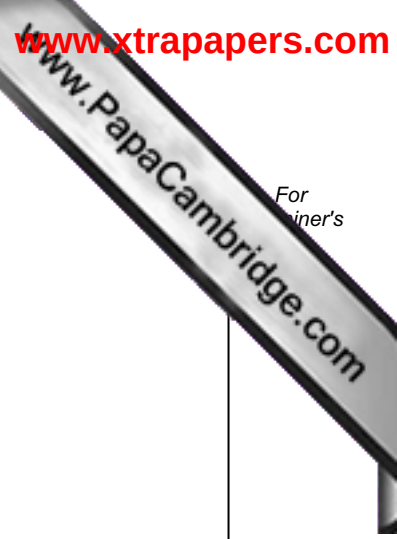
Carefully remove the petals and sepals (corolla and calyx) and draw the remainder of the flower. Give a scale for your drawing.  
Label **four** structures.

[8]

6

(b) Cut the ovary in half from top to bottom. Draw and label the ovules.

For  
inner's



[2]

[Total: 10]



**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?

**2** Were there any problems in providing water samples **AS3**, **AS4** and **AS5**?

**3** Which flower did you use as **AS6**?

.....

Were there any problems in providing flower **AS6**?

*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.**