UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Ordinary Level

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

AGRICULTURE **5038/03**

Paper 3 Practical Test **May/June 2011**

1 hour 15 minutes

Candidates answer on the Question Paper.

Additional Materials: As listed in Confidential Instructions

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	
1	
2	
3	
Total	

This document consists of **7** printed pages and **1** Supervisor's Report.

For Examiner's Use

1 **(a)** You are provided with **three** soil samples **AS1**, **AS2**, and **AS3**.

- Place 1 cm depth of **AS1** into a test tube, label it **AS1**.
- Add 0.5 cm depth of barium sulfate to the soil.
- Add 3 cm depth of deionised water or distilled water and mark the level on the test tube with a marker pen.
- Add 1 cm depth of soil indicator.
- Place a cork or bung in the test tube and shake.
- Allow the contents to settle.
- Use a colour test card to identify the pH of the soil.
- Repeat the procedure using **AS2** and then **AS3**.

(i) Record your results in the table below.

sample	colour after settling	pH of sample
AS1		
AS2		
AS3		

[6]

(ii) Which soil sample would be best for growing a cereal crop that prefers an alkaline soil?

.....

Give **two** reasons for your answer. .....

.....

.....[2]

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(b) (i) **AS4**, **AS5** and **AS6** are samples of **three** different soils.
Make careful observations of each soil by carrying out the procedures below.

- Use a hand lens to carefully examine each soil sample.
- With moist fingers rub each soil sample between your fingers.

Record your observations in the table below.

sample	observations
AS4	
AS5	
AS6	

[3]

(ii) Match the soil samples with the soil types in the table below.

type	soil sample
clay soil	**AS** .....
organic soil	**AS** .....
sandy soil	**AS** .....

[1]

[Total: 12]

2 Two tubs of fertiliser are found in the farm chemical store.
The farmer wishes to know the chemicals in each fertiliser.
The fertilisers are labelled **AS7** and **AS8**.

Carry out the tests below.

(a) Test 1

- Place a spatula of **AS7** and **AS8** into separate, clean, dry test tubes.
- Label the test tubes **AS7** and **AS8**.
- Add 4 cm depth of sodium hydroxide solution to each test tube.
- Warm each test tube gently and CAREFULLY over a flame. Wear safety goggles and take care to point the end of the test tube away from people.
- Hold damp red litmus paper over the top of the tube in the vapour.
  TAKE CARE NOT TO TOUCH THE SIDE OF THE TEST TUBE WITH THE LITMUS PAPER.

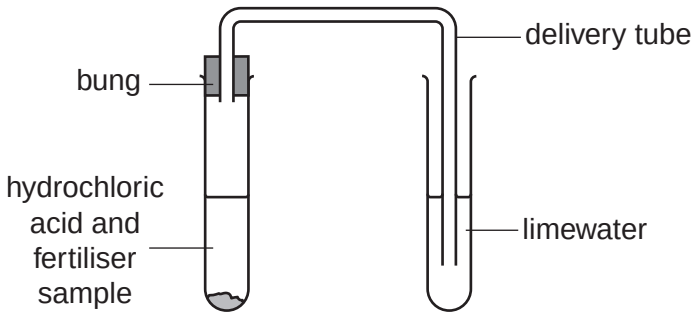
Record your observations in the table below.

	observations
AS7	
AS8	

[2]

(b) Test 2

- Put 4 cm depth of limewater in a clean test tube.
- Place a spatula of **AS7** into a separate, clean, dry test tube.
- Label the test tube.
- Add 3 cm depth of dilute hydrochloric acid to the tube containing **AS7**.
- Connect the two test tubes with a delivery tube as shown below.



Record your observations in the table below.
Repeat the test for **AS8**. Rinse the end of the delivery tube that has been in the limewater before using it again.

	observations
AS7	
AS8	

[2]

(c) Use the information below to help you draw conclusions about the chemicals in the two fertilisers, **AS7** and **AS8**.

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ion	test	test result
ammonium ions	• add sodium hydroxide solution • warm carefully	ammonia produced on warming turns damp red litmus paper blue
carbonate ions	• add dilute acid	fizzing, carbon dioxide produced, which turns limewater milky

Write your conclusions in the table below.

	test 1 conclusions	test 2 conclusions
AS7		
AS8		

[4]

[Total: 8]

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3 **AS9** and **AS10** are parts of two different plants.

Look at the structure of **AS9** and **AS10** carefully.

(a) **AS9** is wind pollinated.
Look at the structure of **AS9** and identify **two** adaptations of the flower which aid wind pollination.

.....

.....

.....[2]

(b) **(i)** Place **AS10** on a sheet of white card.

Carefully remove from the flower

- a sepal
- a petal
- a stamen (the anther and filament together).

Keep the parts as whole as possible.

Draw and label the parts removed.

[4]

(ii) Take the remaining part of the flower, **AS10**, and place it onto a white tile. Carefully cut the ovary lengthways from top to bottom.

Draw and label the cut section.

Include a scale to show the size of the ovary.

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[4]

[Total: 10]

SUPERVISOR'S REPORT

For Examiner's Use

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

1 pH of soil **AS1** .....

AS2 .....

AS3 .....

State any problems encountered in providing soils **AS4**, **AS5** and **AS6**.

.....

.....

2 State any problems in providing powders **AS7** and **AS8**.

.....

.....

3 Name of flower provided for **AS9** .....

Name of flower provided for **AS10** .....

State any difficulties in providing **AS9** and **AS10** .....

.....

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.**