



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

May/June 2010

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 **6** printed pages, **1** blank page and **1** Supervisor's Report.



1 (a) **AS1** and **AS2** are soils found on a farm. You are going to investigate their properties.

- (i) With moistened fingers carefully rub sample **AS1** between your fingers and thumb. Record your findings in Table 1.1.

Repeat using sample **AS2**.

Table 1.1

sample	describe how the soil feels when rubbed between your moist finger and thumb	tick (✓) the sample that would drain most freely	tick (✓) the sample that contains the most clay
AS1			
AS2			

[4]

- (ii) Which sample would best support a large fruit tree in full leaf, grown in a windy area? Give a reason for your answer.

.....
 [1]

(b) You are now going to find out how much air each soil contains.

- Fill the beaker provided with **AS1** to just above the line showing 200 cm³.
- Carefully tap the beaker to allow the soil to settle.
- Firm by pressing the soil lightly, ensuring the soil is level to the 200 cm³ line.
- Carefully put 100 cm³ of water into a measuring cylinder.
- Slowly pour the water into the beaker until the water just reaches the soil surface.

Record the amount of water that was added, to saturate the soil, in the space below.

Amount of water added to **AS1**

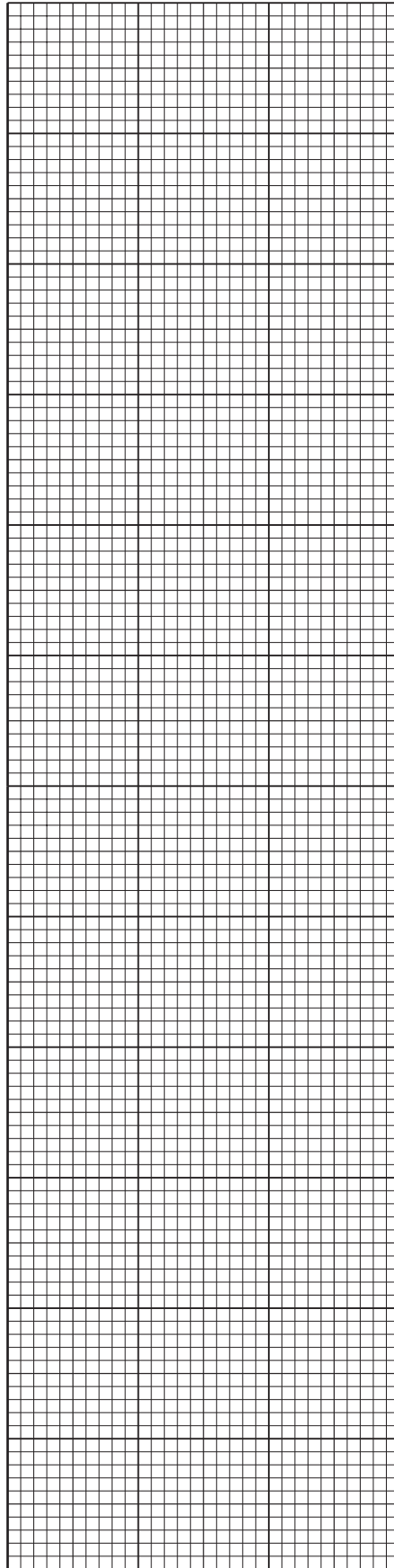
Repeat using a clean beaker for **AS2**.

Amount of water added to **AS2**

3

On the graph paper below draw a bar chart to show the amount of air in **AS1** and **AS2**.

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Use*



[4]

(c) (i) You are now going to test **AS1** and **AS2** to find their pH.

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- Put 2 cm depth of **AS1** into a boiling tube.
- Add 0.5 cm depth of barium sulfate to **AS1**.
- Add distilled water making a total depth of 6 cm.
- Mark the level of the top of the distilled water with the water-resistant marker pen.
- Stand the tube in a boiling tube rack.
- Add 2 cm depth of soil indicator.
- Place a cork in the boiling tube, shake the tube well. Then place the tube in a boiling tube rack and allow the contents to settle.
- Use a test colour chart to read the pH of **AS1** and record your results in Table 1.2.
- Repeat the process for **AS2**.

Table 1.2

sample	colour after contents have settled	pH of the sample
AS1		
AS2		

[4]

(ii) Using your results suggest **one** way a farmer could improve **AS1** for growing crops. Give a reason for your answer.

.....

.....

.....

..... [2]

[Total: 15]

- 2 (a) **AS3**, **AS4** and **AS5** are all feed supplements to boost the energy levels in working donkeys and horses. Your task is to find out which sample contains most glucose.

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- Label a boiling tube **AS3** with the water-resistant marker pen.
- Add 1 cm depth of the feed **AS3**.
- Add 2 cm depth of distilled water, shake to mix and stand in a boiling tube rack.
- Add Benedict's solution to a total depth of 4 cm.
- Repeat the process for **AS4** and **AS5** taking care to label the boiling tubes carefully.
- Stand the boiling tubes **AS3**, **AS4** and **AS5** in the water bath at 95 °C. Allow them to stand for 10 minutes.

- (i) Record your results in Table 2.1.

Table 2.1

sample	colour of sample after heating in the water bath	glucose present?
AS3		
AS4		
AS5		

[5]

- (ii) Which sample contained the **most** glucose?

..... [1]

- (b) **AS6** and **AS7** are animal feeds used for horses and donkeys. You are going to test them for the presence of starch.

- Take a small amount of **AS6** and place it on a white tile or chopping board.
- With a scalpel chop and crush **AS6**.
- Place the crushed material in one corner of the tile and label **AS6** with the marker pen.
- Repeat with **AS7**.
- Add two or three drops of iodine solution to the crushed samples **AS6** and **AS7**.
- Record your results in Table 2.2.

Table 2.2

sample	colour after adding iodine	starch present?
AS6		
AS7		

[4]

[Total: 10]

3 **AS8** is a spark plug from a four-stroke engine.

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(a) In the space below, draw the spark plug and label **three** parts.

[3]

(b) Describe **two** possible faults with a **spark plug** that could make the engine difficult to start.

.....

.....

..... [2]

[Total: 5]

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SUPERVISOR'S REPORT

For
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Use

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

1 AS1 pH and pH colour of soil provided.

.....

AS2 pH and pH colour of soil provided.

.....

Any difficulties encountered in providing the soil samples.

.....

.....

2 Food used for sample **AS6**

Food used for sample **AS7**

Please outline any problems encountered in providing samples **AS3**, **AS4**, **AS5**, **AS6** and **AS7**.

.....

.....

.....

3 Please outline any problems encountered in providing a suitable spark plug.

.....

.....

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

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