



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
General Certificate of Education Ordinary Level

**AGRICULTURE**

**5038/03**

Paper 3 Practical Test

**May/June 2009**

CONFIDENTIAL INSTRUCTIONS

**1 hour 15 minutes**

**Great care should be taken to ensure that any confidential information given does not reach the candidates either directly or indirectly.**

**READ THESE INSTRUCTIONS FIRST**

These instructions give details of the apparatus reagents and specimens required by each candidate for each experiment in this paper. A summary of the questions that will be presented to candidates is included, where appropriate, to allow the teacher to test the apparatus appropriately. **No access to the question paper is permitted in advance of the examination.**

It is assumed that the ordinary apparatus of a science laboratory will be available, including a supply of purified water (distilled or deionised).

If arrangements are made for different sessions for different groups of candidates, care must be taken to ensure that the different groups of candidates are effectively isolated so that **no information passes between them.**

**All specimens should carry only the code letters and numbers as indicated and their identity should not be revealed to the candidates.**

Supervisors should ensure that all specimens have the correct identity attached to the specimen and that these are **not** removed during the examination.

If a candidate breaks any of the apparatus, or loses any of the material supplied, the matter should be rectified and a note made in the Supervisor's Report.

Supervisors are advised to remind candidates that **all** substances in the examination should be treated with caution. Pipette fillers and safety goggles should be used where necessary.

In accordance with COSHH (Control of Substances Hazardous to Health) Regulations, operative in the UK, a hazard appraisal of the examination has been carried out.

The following codes are used where relevant

**C** = corrosive substance

**F** = highly flammable substance

**H** = harmful or irritating substance

**O** = oxidising substance

**T** = toxic substance

If you have any problems or queries regarding these Instructions, please contact CIE

by e-mail [International@cie.org.uk](mailto:International@cie.org.uk)

by phone +44 1223 553554

by fax +44 1223 553558

stating the Centre number, the nature of the query and the syllabus number quoted above.

This document consists of **3** printed pages and **1** blank page.



All specimens/materials should carry only the letters/numbers as indicated and their identity should not be revealed to the candidates.

Supervisors should ensure that all specimens have the correct identity attached to the specimen and that these are not removed or altered during the examination.

Specimens and apparatus should be provided as follows.

**1** Each candidate will need:

- a ripe tomato labelled **AS1**
- a sweet potato labelled **AS2**  
(if not available an Irish potato may be substituted but must be indicated on the supervisors notes)
- candidates only require a small specimen
- access to a sharp scalpel or knife (the direction of cut for AS1 and AS2 into two halves does not matter)
- a tile or cutting board
- 4 clean test tubes
- access to Benedict's solution labelled **Benedict's solution**
- dropping pipette
- access to a water bath at 90- 95 °C  
(a beaker of freshly boiled water could be used instead)
- spotting tile or white tile used for cutting (this can be the same tile as above)
- iodine solution clearly labelled **iodine solution** with dropper pipette
- 0.5M sodium hydroxide solution labelled **sodium hydroxide solution** with dropping pipette
- 1% copper sulfate solution labelled **copper sulfate solution** with dropping pipette
- marker pen or labels
- eye protection

**2** Each candidate will need:

- access to soil with a pH of 4.0 – 5.0 labelled **AS3**
- access to soil with a pH of 8.0 – 9.0 labelled **AS4**  
(sufficient soil will be needed for each candidate to have approximately 20 cm<sup>3</sup> of each soil. To lower the pH of soil, moss peat can be added if not available, citric acid may be added or ammonium sulfate. To raise the pH of the soil, powdered chalk or calcium hydroxide may be added.)
- 2 clean test tubes with a cork or rubber bung
- access to barium sulfate labelled **barium sulfate**
- access to soil indicator labelled **soil indicator** with a dropper pipette (**universal indicator could be used instead**)
- access to colour charts or cards
- a marker pen
- a ruler
- distilled or deionised water clearly labelled **distilled or deionised water**
- a receptacle for waste
- test tube rack

**3** Each candidate will need:

- 4 clean test tubes
- a marker pen
- 20ml of 0.5M ammonium sulfate solution labelled **AS5**
- 20ml of distilled or deionised water labelled **AS6**
- access to bench strength nitric acid labelled **nitric acid**
- access to dilute barium nitrate labelled dilute **barium nitrate**
- access to 0.5M sodium hydroxide solution labelled **sodium hydroxide solution**
- a test tube holder
- a bunsen burner
- a heat proof mat
- eye protection
- litmus paper

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