



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
General Certificate of Education Ordinary Level

**AGRICULTURE**

**5038/03**

Paper 3 Practical Test

**May/June 2011**

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

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.

Safety equipment e.g. safety goggles should be used where necessary.

Specimens and apparatus should be provided as follows.

1 Each candidate will need:

- Three soil samples labelled **AS1**, **AS2** and **AS3**.
  - **AS1** an acid soil with a pH of 4.0 – 4.5
  - **AS2** a neutral soil with a pH of 7.0
  - **AS3** an alkaline soil with a pH of 8.0 – 8.5

Each candidate will need approximately 10 cm<sup>3</sup> of each sample.

- 3 clean, dry test tubes
- test tube rack
- spatula
- barium sulfate for soil testing clearly labelled *barium sulfate*
- deionised or distilled water
- 3 corks or bungs to fit test tubes
- soil indicator in dropper bottle labelled *soil indicator* (if soil indicator not available then use universal indicator)
- pH colour chart
- pen suitable for marking test tubes
- Three soil samples labelled **AS4**, **AS5** and **AS6**.
  - **AS4** a coarse, gritty sandy soil with little or no clay
  - **AS5** a heavy clay soil
  - **AS6** an organic or peaty soil with distinguishable raw humus

Each candidate will need approximately 10 cm<sup>3</sup> of each sample.

- hand lens
- access to water
- white tile or white paper

**2** Each candidate will need:

- Two chemicals, in powder form, labelled **AS7** and **AS8**.
  - **AS7** ammonium sulfate powder
  - **AS8** calcium carbonate powder

Each candidate will need approximately two spatulas of each chemical.

- 6 clean, dry test tubes
- spatula
- test tube rack
- 0.5 M sodium hydroxide solution in a dropper bottle labelled *dilute sodium hydroxide* [C]
- safety goggles
- Bunsen burner
- test tube holder
- red litmus paper
- dilute hydrochloric acid, 1 M, in dropper bottle labelled *dilute hydrochloric acid*
- a test tube bung fitted with a delivery tube
- limewater
- pen suitable for marking test tubes

**3** Each candidate will need:

- a plant, showing wind pollinated flowers e.g. grass, wheat, barley, (the anthers and stigmas should be showing) labelled **AS9**
- an insect pollinated flower e.g. hibiscus, bean (the flower must have an ovary that can easily be cut in half lengthwise) labelled **AS10**
- ruler
- scalpel
- chopping board or white tile
- white card
- hand lens ( $\times 10$  ideally)
- forceps

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