



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Ordinary Level

AGRICULTURE

5038/03

Paper 3 Practical Test

October/November 2007

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.

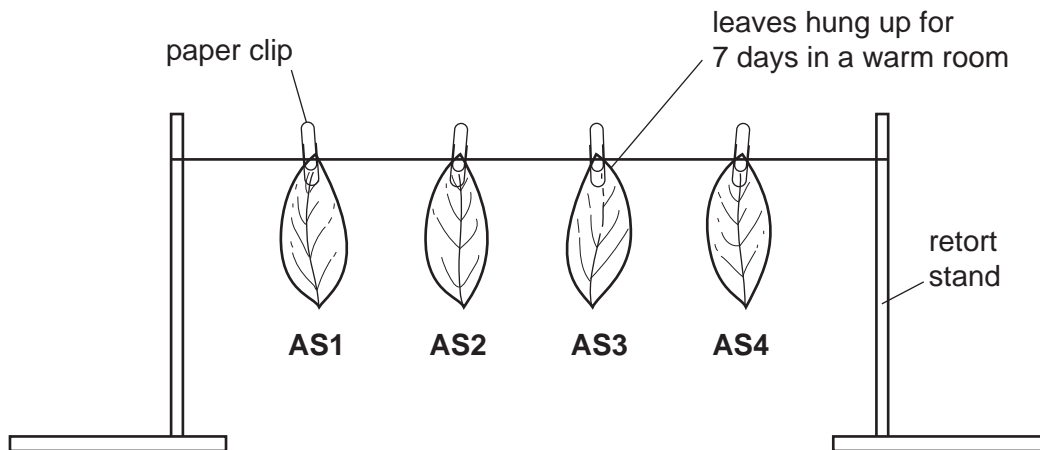
Supervisors should ensure that all specimens have the correct identity attached to the specimen and that these are not removed or altered during the examination.

Specimens and apparatus should be provided as follows.

Question 1

This needs to be set up 7 days prior to the examination.

- (a) Set up a line between two retort stands and suspend the leaves with paper clips as in the diagram below.



Sufficient leaves need to be treated so that candidates share one between two as a maximum. Leaves can be presented in a tray or dish clearly labelled as to treatment. **Candidates should be reminded to return leaves to the correct tray.**

Treat leaves as follows:

- **AS1** Vaseline coated on both sides of leaf
- **AS2** Vaseline on lower surface only
- **AS3** Vaseline on top surface only
- **AS4** No treatment

(place leaves in trays labelled **AS1, AS2, AS3, AS4**)

The leaf species chosen will depend on availability, the leaves should be mature and no longer than 70 mm, with a fairly waxy upper cuticle. (Suggest Escallonia sp, Camellia sp, Gysalinea sp, Chrysanthemum sp, Hibiscus sp). Please record alternative leaves used on supervisor's report. Leaves need to be set up 5 to 7 days prior to the examination depending on temperature and humidity. If in doubt leaves could be hung in a drying cabinet at 30–40°C for 24 hours.

- (b) Place freshly cut grass in trays to dry for 5 to 6 days at 30°C. Place 5 grams of dry grass in a beaker labelled **AS5**.

Provide the most accurate balance/scales available, ideally accurate to one decimal place. One balance/scale for 5 students if possible.

Question 2

Each candidate should be provided with approximately 20 grams of dry peat or other soil with a pH of 4 - 4.5 in a 100 to 200ml beaker labelled **AS6**.

Each candidate should be provided with:

- a spatula;
- 2 test tubes;
- a permanent marker;
- labelled containers of soil indicator, Barium sulphate, distilled or de-ionised water with a pH 7.0;
- 50 cm³ beaker;

Each candidate needs access to:

- 10 cm³ hydrated lime.

[H]

Question 3

Candidates need samples **AS7** and **AS8** provided in clearly labelled beakers. Approximately 10 spatulas full for each candidate.

AS7 - a 50/50 mixture of glucose powder and dried albumen (if granules grind to a fine powder).

AS8 - dried albumen (if granules please grind to a fine powder) or any food supplement with protein but not starch or glucose.

Each candidate should have access to

- A water bath at 90°C or beakers of gently boiling water clearly labelled "Water Bath".
- A supply of warm water at 30 – 60°C.

Each candidate will need:

- boiling tubes and test tubes;
- boiling tube racks and test tube holders;
- a marker pen;
- clearly labelled dropping bottles of Benedicts solution, Sodium hydroxide at 0.5M and dilute copper sulphate (bench strength).

[C]

[H]

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