



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
General Certificate of Education Ordinary Level

**BIOLOGY**

**5090/03**

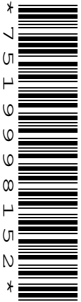
Paper 3 Practical Test

**May/June 2008**

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.**



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 **4** printed pages, **2** blank pages and **1** Supervisor's report.



## INSTRUCTIONS FOR PREPARING APPARATUS

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

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.

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.**

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 the 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

Centres are reminded that they are **not** permitted to open the question paper envelopes before the examination. There are **no** exceptions to this. Centres are also referred to the Handbook for Centres 2006, and in particular Section 3.1.2 (c) (i), Security of Question Papers and Examination Materials, as well as 3.3.11.1, Practical Examinations in Science Subjects.

If there are any difficulties with any aspect of setting up this practical examination that the Centre is not able to sort out, it is essential for Centres to contact the Product Manager as soon as possible by e-mail to [international@cie.org.uk](mailto:international@cie.org.uk), by fax to +44 1223 553558 or by phone to +44 1223 553554.

### Confidential Instructions

*Each candidate must be supplied with the following apparatus and materials.*

#### Question 1

Each candidate will require:

(i) 3 large test-tubes and means of support e.g. test-tube rack or beaker.

[H] (ii) An agar block measuring 3 cm × 1 cm × 1 cm.  
The blocks should be made by adding 25 g of agar to 500 cm<sup>3</sup> of boiling water to dissolve the agar. 4 cm<sup>3</sup> of cresol red indicator should be added to 500 cm<sup>3</sup> of the hot agar along with enough 2M ammonium hydroxide to produce a distinctive red colour, 2 cm<sup>3</sup> should be sufficient. The agar should then be poured into shallow trays at least 1 cm deep and kept in cool conditions in order to set firmly. Agar normally sets between 32 °C and 40 °C. Blocks measuring 3 cm × 1 cm × 1 cm should be cut and one provided for each candidate, labelled **A1**.

The supervisor should have several spare agar blocks available.

Centres would be well advised to practise preparing these blocks beforehand and increase the concentration of the agar if required.

Cresol red indicator can be made by dissolving 0.5 g of cresol red in 20 cm<sup>3</sup> of ethanol which is then added 30 cm<sup>3</sup> of distilled water.

[H] (iii) 50 cm<sup>3</sup> of dilute hydrochloric acid (1M), labelled **A2**.

(iv) Scalpel or sharp knife.

(v) White tile or cutting board.

(vi) Sight of a clock, or watch, with a second hand.

(vii) A paper towel.

(viii) A mm ruler.

**Question 2**

Each candidate will require:

- (i) Two variegated leaves of similar size and patterning from the same species of dicotyledonous plant e.g. Hibiscus or Pelargonium, with their petioles still attached. The variegations should be green and yellow or green and white (no reds or purples). Both leaves should have been kept in conditions favourable for photosynthesis.

One leaf should be fresh and labelled **L1** and presented in a Petri dish.

The second leaf must have been tested for starch i.e. placed in boiling water, then heated in alcohol, then covered with iodine solution and show a positive result (black) only in previously green areas of the leaf. The tested leaf should be labelled **L2** and presented in a Petri dish.

Leaves may be stored in a plastic bag prior to the examination.

Centres would be well advised to try this procedure in advance of the examination to ensure a positive result.

- (ii) A mm ruler (as provided for question 1).



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**This form should be completed and sent to the examiner with the scripts.**

**REPORT ON PRACTICAL BIOLOGY**

**General Certificate of Education Ordinary Level**

**May/June Session 2008**

*The Supervisor or Teacher responsible for the subject should provide the following information.*

- 1 Was any difficulty experienced in providing the necessary materials? If so, give brief details.
  
- 2 Give details of any difficulties experienced by particular candidates, giving names and candidate numbers. Reference should be made to:
  - (a) difficulties arising from specimens;
  - (b) accidents to apparatus or materials;
  - (c) any other information that is likely to assist the Examiner, especially if this cannot be discovered from the scripts.

Other cases of individual hardship, e.g. illness or disability, should be reported direct to CIE on the normal 'Special Consideration Form' as detailed in Part 6 of the Handbook for Centres.



- 3 A plan of work benches, giving details of the candidate numbers of the places occupied by the candidates for each session, must be enclosed with the scripts. The space below can be used for this, or it may be on separate paper.

**Declaration** (to be signed by the Principal)

The preparation of this practical examination has been carried out so as to maintain fully the security of the examination.

Signed .....

Name (in block capitals) .....

Centre number .....

Centre name .....

If scripts are required by CIE to be despatched in more than one envelope, it is essential that a copy of the relevant Supervisor's report and the appropriate seating plan(s) are sent inside **each envelope**.

