

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
General Certificate of Education Ordinary Level

**BIOLOGY**

**5090/03**

Paper 3 Practical Test

May/June 2006

**1 hour 15 minutes**

**CONFIDENTIAL INSTRUCTIONS**

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

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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 a 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 envelope for the examination. There are **no** exceptions to this. Centres are also referred to the Handbook for Examinations 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, Dr Rick Nelms, 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) Four pieces of popcorn (**without** any additive such as butter), labelled **F1**.
- (ii) Four pieces of high-fat puffed snack of similar size to the popcorn or popcorn dipped in cooking oil and allowed to drain in the air for 24 hours, labelled **F2**. In the examination paper, candidates will be given information that will suggest to them that **F1** and **F2** have the same mass.
- (iii) Iodine in potassium iodide solution in a suitable dispenser, labelled **iodine solution**.
- (iv) Access to water.
- (v) Retort stand or similar with clamp on heat proof mat.
- (vi) Two large test-tubes to hold at least 25 cm<sup>3</sup> in a suitable test-tube rack.
- (vii) Measuring cylinder to measure 20 cm<sup>3</sup>.
- (viii) Thermometer to read 0 °C to 100 °C.
- (ix) Mounted needle.
- (x) Tile or similar for performing starch test.
- (xi) Safety goggles or other locally available eye protection.
- (xii) Method of setting fire to popcorn and peanuts such as a Bunsen burner.
- (xiii) Paper towel or similar.

**Question 2**

Each candidate will require:

- (i) Test-tube rack with one empty test-tube.
- (ii) Means of holding hot test tube.
- (iii) Benedict's solution in a suitable dispenser labelled **Benedict's solution**.
- (iv) Access to a waterbath for heating test-tubes. This could consist of a Bunsen burner, tripod, gauze and 250 cm<sup>3</sup> or similar beaker or heatproof container, half full of hot water, with thermometer that can read up to at least 100 °C. Alternatively, a small number of candidates might share an electrically heated waterbath set to at least 80 °C, provided that the candidates can be properly supervised and can move to the waterbath without disturbing each other. Please ensure that the type of waterbath used by the students is recorded on the supervisor's report.
- (v) Four dried sultanas labelled **S1**.
- (vi) Four sultanas, similar to **S1**, that have been prepared by having boiling water poured over them, left to soak for twenty-four hours and labelled **S2**.
- (vii) A slice, 5 mm–10 mm thick, of cucumber in a Petri dish of water and labelled **S3**.
- (viii) Hand lens





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

## REPORT ON PRACTICAL BIOLOGY

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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 Carry out **1(a)(i)** and enter details of the results.

|           | observations            |                | conclusions    |
|-----------|-------------------------|----------------|----------------|
|           | starch test             | fat test       |                |
| <b>F1</b> | .....<br>.....<br>..... | clear          | .....<br>..... |
| <b>F2</b> | .....<br>.....<br>..... | cloudy / milky | .....<br>..... |

**Table 1.1**

- 3 Describe the relative sizes of **S1** and **S2** in question 2.
 

**S1** .....

**S2** .....
- 4 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.



- 5 A plan of work benches, giving details of the candidate numbers of the places occupied by 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**.

