



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
General Certificate of Education Ordinary Level

**BIOLOGY**

**5090/03**

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.**



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) a small hand mirror.
- (ii) two unused clean cotton buds wrapped in paper/cling film/foil.
- (iii) a small quantity of fine sugar in an open dish [ground granulated or icing sugar], labelled **sugar**.
- (iv) universal indicator, labelled, in a suitable dispenser.
- (v) colour chart for universal indicator.
- (vi) shallow open dish in which to lay cotton bud.
- (vii) pot of disinfectant to drop cotton buds into at the end of the practical test, to be labelled **disinfectant**, e.g. lysol or dettol.
- (viii) sight of a clock.
- (ix) 7 clean test-tubes and one large test-tube in a test-tube rack.
- (x) test-tube holder.
- (xi) means of labelling test-tubes.
- [H] (xii) Iodine in potassium iodide solution, labelled **iodine solution** and with suitable dispenser.
- [H](xiii) Benedict's solution, labelled, with dispenser.
- (xiv) waterbath or other suitable means of heating for reducing sugar test.
- (xv) test-tube, labelled **starch solution**, containing 10 cm<sup>3</sup> 1.0% starch solution (prepared by heating and cooling to provide an even suspension).
- (xvi) test-tube, labelled **amylase solution**, containing 10 cm<sup>3</sup> 0.5% amylase (diastase) solution (available from usual laboratory sources). **This needs to be tested before the examination and adjusted accordingly.**
- (xvii) test-tube, labelled **sodium chloride (salt) solution**, containing 1 cm<sup>3</sup> 0.5% sodium chloride solution.
- (xviii) teat pipette.

**Additional material for Question 2**

Each candidate will require:

- (i) seeds of Cruciferae family or similar sized seeds such as *Brassicacae*, cabbage, radish, etc., or peas. Please ensure that each candidate is given the same type of seed for **S1**, **S2** and **S3**.
- **S1** to be soaked and left in refrigerator (to be swollen but not germinated). This can be done the day before the examination (if peas are used, soak overnight before use).
  - **S2** to be soaked but covered with a box or wrapped in foil to eliminate all light, to be left at room temperature for germination for four days;

**Use damp conditions in trays to prevent seedlings drying out, but do not grow on tissue or cotton wool as candidates are expected to observe the roots for development of root hairs. Damp filter paper would be satisfactory.**

- **S3** to be soaked and left in the light on a bench at room temperature for germination for a similar period to **S2**. (If temperatures are high and these are growing tall, place in refrigerator, but then expose to the light for one day before the examination – this may be tested prior to examination period).

**2 or 3 of each of the samples should be provided to every candidate, labelled S1, S2 and S3, in shallow dishes on moist paper to prevent drying out. The specimens of S2 should still be covered with a box, or wrapped in foil, when issued to candidates at the time of the examination.**

- (ii) scalpel or sharp knife.
- (iii) white tile or suitable cutting surface.
- (iv) hand lens ( $\times 10$  preferably).
- (v) microscope slide.
- (vi) ruler, mm.
- (vii) forceps.



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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 2009**

*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**.

