

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
International General Certificate of Secondary Education

**BIOLOGY**

**0610/05**

Paper 5 Practical Test

October/November 2005

**1 hour**

**CONFIDENTIAL INSTRUCTIONS**

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

**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.**

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.

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.**

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.

**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@ucles.org.uk](mailto:International@ucles.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, **3** blank pages and a Supervisor's Report

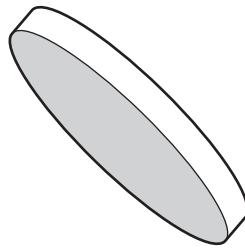


**There must be no access to the question paper before this examination starts** (regulation 3.2.7 (e), page 36 CIE Handbook for Centres 2005). There are **no** exceptions to this. All problems with making the arrangements for this examination must be referred to Dr Rick Nelms (Product Manager) – e-mail [international@ucles.org.uk](mailto:international@ucles.org.uk), phone +44 1223 553554 or Fax +44 1223 553558.

### Question 1

*Each candidate to be supplied with:*

- (i) part of a peeled fresh Irish potato, *Solanum tuberosum*, presented in a bag or wrapped in plastic film to avoid discolouration, labelled as 'P1'.



The piece of potato should be large enough for 3 'chips', each chip measuring 50 mm x 10 mm x 5 mm, to be cut from it. If necessary, the candidate can be given more than one piece from which he/she can cut the 3 'chips';

- (ii) a single piece of peeled potato, approximately 50 mm x 10 mm x 5 mm, that has been soaked in 1 mol dm<sup>-3</sup> (= 1M = 34.2%) sucrose solution for 12 – 18 hours. It should be presented in a petri dish with a lid, in a plastic bag or other suitable manner and should be labelled as 'P2'.
- (iii) knife or scalpel;
- (iv) board or tile to cut on.
- (v) ruler (mm);
- (vi) distilled water in a suitable container, e.g. petri dish base, labelled "distilled water", that is large enough to submerge three 'chips' 50mm long;
- (vii) sight of a clock or watch;
- (viii) forceps;
- (ix) paper towelling;

## Question 2

Each candidate to be supplied with:

- (i) half of a large dicotyledonous seed, such as broad bean, that has been soaked in water for 24 hours and has been cut longitudinally (to show the plumule, radicle, complete cotyledon and testa), labelled as '**W1**';
- (ii) ruler (as used for Question 1);
- (iii) hand lens;
- (iv) 5 cm<sup>3</sup> solution **W2** in a test tube, labelled as '**W2**';
- (v) 5 cm<sup>3</sup> solution **W3** in a test tube, labelled as '**W3**';
- (vi) 5 cm<sup>3</sup> solution **W4** in a test tube, labelled as '**W4**';
- (vii) iodine in potassium iodide solution in a suitable container, labelled as '**iodine solution**', with means of dispensing;
- (viii) Benedict's reagent in a suitable container, labelled as '**Benedict's reagent**', with means of dispensing;
- (ix) A beaker, tripod, gauze and burner (e.g. Bunsen burner) for a water bath. The burner should be capable of bringing a half-full beaker of water to the boil within 5 minutes. Alternatively, provide access to a thermostatically controlled waterbath at a temperature of at least 90<sup>0</sup>C, containing a means to support the test tubes used in the experiment. These waterbaths could be shared between two or more candidates if this is necessary, but every effort should be made to minimise sharing and to plan the careful supervision of candidates sharing waterbaths.
- (x) 3 test tubes in a test tube rack or other means of support;
- (xi) access to water.

It is suggested that supervisors ensure that sufficient solutions of **W2**, **W3** and **W4** are available to allow candidates to receive additional supplies if necessary.

Supervisors should make up solutions **W2**, **W3** and **W4** in the following way:

For 1 dm<sup>3</sup> solution **W2**,

add 10 g starch to approximately 300 cm<sup>3</sup> distilled water, heating to form a suspension. Once the suspension has cooled, stir thoroughly and add sufficient distilled water to make up the solution to 1 dm<sup>3</sup>. For this investigation the starch should be free from reducing sugar. It is essential that a trial solution of the starch to be used is made up and tested **well in advance** of the practical examination. Cornflour or maize starch should be suitable.

For 1 dm<sup>3</sup> solution **W3**,

add 10 g starch to approximately 300 cm<sup>3</sup> distilled water, heating to form a suspension. Once the suspension has cooled, add 30g glucose, stir thoroughly and add sufficient distilled water to make up the solution to 1 dm<sup>3</sup>.

For 1 dm<sup>3</sup> solution **W4**,

add 40 g glucose to approximately 300 cm<sup>3</sup> distilled water. Stir thoroughly and add sufficient distilled water to make up the solution to 1 dm<sup>3</sup>.

Solutions **W2**, **W3** and **W4** should be tested for reducing sugar before the start of the practical examination and the colours obtained should be entered onto the Supervisor's Report.



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

**REPORT ON PRACTICAL BIOLOGY**

**IGCSE**

**October/November Session 2005**

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

- 1** Please identify **W1**.

.....

- 2** Please state the colours produced by solutions **W2**, **W3** and **W4** when tested for the presence of reducing sugar.

**W2**

.....

**W3**

.....

**W4**

.....

- 3** Was any difficulty experienced in providing the necessary materials? If so, give brief details.

- 4** Give details of any difficulties experienced by particular candidates, giving names and candidate numbers. Reference should be made to:

**(a)** difficulties arising from faulty 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 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 inside **each envelope**.

