

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

BIOLOGY

0610/05

Paper 5 Practical Test

May/June 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 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.

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,

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.

Question 1

Each candidate to be provided with the following apparatus and materials:

- (i) a piece of peeled potato (Irish potato, *Solanum Tuberosum*) in a plastic bag or covered with plastic cling wrap (to prevent colour change), large enough for 2 cubes, each with sides measuring 1 cm, to be cut from it, labelled 'raw potato'
- (ii) a piece of boiled potato, similarly covered, large enough for 2 cubes, each with sides measuring 1 cm, to be cut from it, labelled 'boiled potato'
- (iii) knife or scalpel
- (iv) board or tile to cut on
- (v) ruler (mm)
- (vi) 4 large test tubes (boiling tubes) in a suitable test-tube rack or other means of support
- (vii) means of labelling test tubes
- [H] (viii) 20 cm³ of 0.45 mol dm⁻³ hydrogen peroxide solution (= 0.45 M = 5 vol = 1.5% w/v) in a suitable container, labelled 'hydrogen peroxide'
- (ix) sight of a clock or watch
- (x) paper towelling

Supervisors should test the activity of the hydrogen peroxide with the variety of potato to be used in the large test tube in advance of the practical examination. The reaction with a well chopped 1 cm³ cube of potato should produce a froth that remains inside the test tube while the reaction with a single 1 cm³ of potato should produce a froth within 5 minutes. If necessary, the concentration of the hydrogen peroxide should be altered to produce the desired results, and fresh supplies of potato obtained.

The potato should be boiled whole or in large pieces for 15 minutes or steamed for at least 30 minutes. The activity of the hydrogen peroxide with the boiled potato should be checked in advance of the practical examination to ensure that little or no activity results. If necessary, adjust the cooking time.

If problems are experienced with the potato becoming too soft and unable to be cut into cubes after boiling, then sweet potato can be substituted **throughout** the experiment.

Question 2

Each candidate to be provided with the following apparatus and materials:

- (i) an insect pollinated flower, suitable for cutting longitudinally to show a single carpel and stamens, labelled as 'F1'. The flower should have a single ovary and show radial symmetry. A maximum of 1 cm of flower stalk should be present. Suitable examples might include members of the Rosaceae such as *Prunus*, *Malus*, *Pyrus*, certain members of the Liliaceae, *Primula*, *Campanula*, *Hibiscus*, Rose of Sharon, hosta;
- (ii) scalpel or craft knife with sharp blade (or **very** sharp knife) (this could be the same as in Question 1)
- (iii) sharp scissors
- (iv) board or tile to cut on
- (v) hand lens
- (vi) ruler (mm) (as in Question 1)
- (vii) 10 cm³ solution **F2** in a suitable container, labelled as 'F2' (the container could be one of the test tubes in (xi))
- [H] (viii) iodine in potassium iodide solution in a suitable container, labelled as 'iodine solution', with means of dispensing
- (ix) Benedict's reagent in a suitable container, labelled as 'Benedict's reagent', with means of dispensing
- (x) a beaker, tripod, gauze and Bunsen burner for a water bath (a shared water bath is not appropriate)
- (xi) 2 test tubes in a test tube rack or other means of support

Supervisors should make up solution **F2** in the following way:

For 1 dm³ solution **F2**, add 40 g glucose to approximately 300 cm³ distilled water. Stir thoroughly and add sufficient distilled water to make up the solution to 1 dm³.

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

REPORT ON PRACTICAL BIOLOGY

IGCSE

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

1 Please identify **F1**.

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2 Please state the colours produced by solutions **F2** when tested for the presence of reducing sugar.

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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 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**.

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