



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

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BIOLOGY

0610/05

Paper 5 Practical Test

October/November 2007

CONFIDENTIAL INSTRUCTIONS

1 hour

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 **1** Supervisor's Report.



READ THESE INSTRUCTIONS FIRST

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

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.**

All specimens should carry only the code letters and numbers as indicated and their identity should not be revealed to the candidates.

Supervisors should ensure that all specimens have the correct identity attached to the specimen and that these are **not** removed during 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.

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.

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

Question 1

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

- (i) 4 test tubes labelled **A**, **B**, **C** and **D** in a supporting rack.
- Test tubes **A** and **B** containing 10cm³ 1% trypsin **freshly prepared**. This cannot be made up in water before the day of the examination and stored in a refrigerator as it will deteriorate;
 - Test tube **C** containing 2 cm³ buffer pH 8;
 - Test tube **D** containing 2 cm³ buffer pH 4.

Buffer tablets can be purchased from suppliers or citrate phosphate mixtures can be prepared and made up to the required pH and checked with either universal indicator paper or pH meter.

To prepare the two stock solutions use 0.1 mol dm⁻³ citric acid and 0.2 mol dm⁻³ sodium hydrogen phosphate. To prepare 100 cm³, mix the following volumes from the table.

pH	citric acid / cm ³	sodium hydrogen phosphate / cm ³
4	61.5	38.5
8	2.8	97.2

- (ii) Glass rod or similar.
- (iii) Two pieces of photographic film cut into 1cm x 1cm pieces. Kodak or Ilford flat sheet for X-ray or black and white film is suitable. Some photographic films, especially colour, do not have a protein layer.
- (iv) Stop clock or view of a clock with a second hand.
- (v) Forceps.

NB BEFORE THE DAY OF THE EXAMINATION

The enzyme will need to be tested before the examination for its activity. It is suggested that working with pH 8 buffer solution that 1% trypsin is tried out on one piece of photographic film.

- If the time for clearing of the film is too fast, (less than 1 min) then the enzyme will need to be diluted – 0.5% trypsin.
- If the time for clearing is too slow (more than 5 minutes) then the concentration enzyme will need to be increased to 2% or more.
- Ideally the time to be taken should be 1 to 2 minutes.

Enzyme activity can vary between different sources and batches of enzyme.

Question 2

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

- (i) large, simple (undivided) dicotyledonous leaf about 10cm in length labelled **W1**.
It is essential that:

- the leaf has a petiole;
- the leaf blade is not more than 10cm in length and no more than 6cm wide;
- the upper surface is different to the lower surface eg shiny, waxy;
- the leaf is not covered in hairs.

Suitable examples include rhododendron, oleander, *Smilax*, ginger, buddleja, etc.

- (ii) Hand lens.

- (iii) Ruler.

- (iv) Large (Pyrex glass) beaker, container or saucepan to hold hot water into which **W1** can be submerged. This must have a suitable label to warn about containing hot water. The candidates have been asked to raise their hands when they have reached a particular stage of Q2. Hot water should be poured into this container when this indication is given. There should be sufficient depth of water in the container so that the leaf can be submerged below the surface.

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 **W1**.

common name

scientific name

2 Please make a simple drawing of the lower surface of a typical leaf and mark on the drawing the actual width and length of the leaf.

3 Was any difficulty experienced in providing the necessary materials? Give brief details of the enzyme concentration used.

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**.