



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
International General Certificate of Secondary Education

---

**BIOLOGY**

**0610/51**

Paper 5 Practical Test

**October/November 2010**

CONFIDENTIAL INSTRUCTIONS

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

---

**READ THESE INSTRUCTIONS FIRST**

If you have any problems or queries regarding these Instructions, please contact CIE

by email    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 **7** printed pages and **1** blank page.



**READ THESE INSTRUCTIONS FIRST**

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.** Centres are reminded that candidates are expected to follow the instructions on the question paper and record all their results. They will not be penalized if these results are not what they expect.

The Supervisor should make sure the Supervisor's report is fully completed and a copy is enclosed with each packet of scripts.

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

**N** = harmful to the environment

Centres are reminded that they are **not** permitted to pen the question paper envelopes before the examination. Centres are also referred to the Handbook for Centres, and in particular Section 3.1.2 © (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 resolve, it is essential for Centres to contact the Product Manager as soon as possible by e-mail to [international@cie.org.ukm](mailto:international@cie.org.ukm), by fax to +44 1223 553558 or by phone to +44 1223 553554.

**Question 1**

Each candidate should be provided with:

- (i) 120 cm<sup>3</sup> apple pulp provided in a suitable container, labelled **W1**.

Use crisp and juicy cooking apples. Peel the apples and remove the core. Chop the apples into small pieces. Place the pieces in a blender with a small quantity of water (about 50 cm<sup>3</sup>) to help the blending process. Blend until there is a smooth pulp.

The blending could be done the day before the examination. The apple pulp should be covered and kept in a refrigerator.

Tinned apple pulp or puree may be used instead. This does **not** have to be blended. Water does **not** have to be added.

Stir the apple pulp thoroughly before putting it into the labelled containers.

- (ii) Three test-tubes in a test-tube rack containing:

- 5 cm<sup>3</sup> water labelled **0%**
- 5 cm<sup>3</sup> 1% enzyme solution labelled **1%**
- 5 cm<sup>3</sup> 3% enzyme solution labelled **3%**.

Prepare the two enzyme solutions as follows:

**1% enzyme solution** – add 1 g of pectinase powder to 100 cm<sup>3</sup> water.

**3% enzyme solution** – add 3 g of pectinase powder to 100 cm<sup>3</sup> water.

The enzyme solution must be prepared on the day of the examination.

Pectinase is readily available from scientific suppliers. In some parts of the world, it may also be available from wine manufacturers in powder form, sold by the name of 'Pectolase'.

Pectinase is also available in liquid form. When making up the solutions, follow the instructions provided by the manufacturer. (Often it can be assumed that 1 cm<sup>3</sup> of the liquid form is equivalent to 1 g of the powder).

It is advisable to use freshly purchased pectinase.

- (iii) 6 empty containers that can contain at least 100 cm<sup>3</sup>. Plastic cups may be suitable.
- (iv) a means of labelling containers.
- (v) a plastic spoon.
- (vi) view of a clock.
- (vii) a small measuring cylinder, 25 cm<sup>3</sup> or 50 cm<sup>3</sup>.
- (viii) 3 filter funnels with filter papers or 3 coffee filters.  
Fine filter papers should **not** be used.
- (ix) paper towels.

The following trial should be carried out as soon as these instructions are received.

- Prepare 120 cm<sup>3</sup> of apple pulp as instructed above.
- Prepare a 1% pectinase solution as instructed above.
- Take 40 cm<sup>3</sup> of apple pulp, place in a beaker and add 5 cm<sup>3</sup> of water. Stir thoroughly
- Take another 40 cm<sup>3</sup> of apple pulp, place in a second beaker and add 5 cm<sup>3</sup> of 1% pectinase solution. Stir thoroughly.
- Leave the mixtures for 15 minutes.
- After 15 minutes, filter each mixture into two different beakers.
- You should notice that the mixture with the pectinase gives a larger volume of clearer juice than the mixture with water.
- If there is no difference between the filtrates:
  - write details of the trial and modifications made on the report on page 7 of these instructions.
  - try a different variety of apple
  - obtain fresh pectinase
  - use a different filter paper or coffee filter
  - try a higher concentration of pectinase (if higher concentrations are used in the examination they **must** be labelled 1% and 3%)

**Question 2**

Each candidate should be provided with:

- (i) dry preserved honey bee labelled **W2** in a shallow container, such as a watch glass or plastic tray.
- (ii) pair of forceps.
- (iii) hand lens [ $\times 10$  magnification if possible].
- (iv) small quantity of clear, liquid honey labelled **W3** in shallow dish.
- (v) a plastic spoon [from **Question 1**].
- (vi) white tile.
- (vii) iodine solution and means of dispensing, labelled **iodine solution**.
- (viii) 1 test-tube.
- (ix) test-tube holder.
- (x) hot water provided in an insulated container, such as a polystyrene cup. The temperature of water should be at least 90 °C. Candidates should be given this hot water when they request it.
- (xi) Benedict's solution (or an alternative) and means of dispensing, labelled **Benedict's solution** (or alternative).
- (xii) container with water for washing fingers, labelled **water**.
- (xiii) paper towels.
- (xv) a medium (HB) Pencil, sharp, that will make clear grey or black marks on paper.

**BLANK PAGE**

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

**REPORT ON PRACTICAL BIOLOGY**

**IGCSE**

**October/November Session 2010**

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

- 1** Was there any difficulty experienced in providing necessary material for Question 1?. Give details of the trial carried out as soon as the instructions were received. Describe any modifications that you has to make.
  
- 2** Give details of any difficulties experienced by particular candidates, giving names and candidate numbers. Reference should be made to:
  - (a)** difficulties with specimens or materials;
  - (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 inside **each envelope**.



Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

University of Cambridge International Examinations is part of the Cambridge Assessment Group. Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge.