



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

BIOLOGY

0610/05

Paper 5 Practical Test

October/November 2009

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, 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 supplied with:

- (i) 5 large test-tubes supported in a test-tube rack.
- [C] (ii) Each of the five test-tubes are to contain 5 cm³ 1.0 M hydrogen peroxide **and** 5 cm³ citrate phosphate buffer solution, labelled appropriately **pH 3; pH 4; pH 5; pH 7; pH 8.**

Buffers can be purchased in tablet form with full instructions for use or alternatively can be freshly made up and tested prior to use.

Buffer solutions - make up 0.1 M citric acid and 0.2 M phosphate solutions then mix as follows:

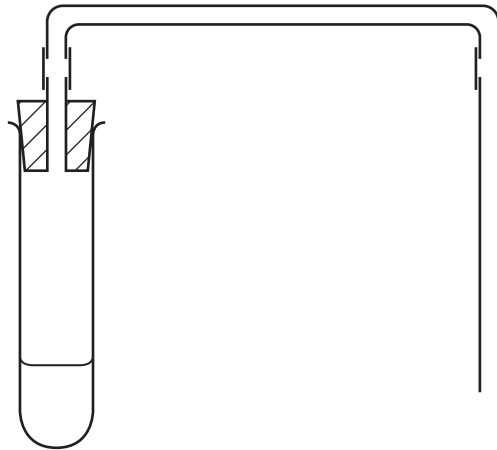
| To prepare 100 cm ³ citric acid-phosphate buffers | | |
|--|--|-------------------------------------|
| pH | 0.2 M sodium hydrogen phosphate, Na ₂ HPO ₄ / cm ³ | 0.1 M citric acid / cm ³ |
| 3.0 | 21 | 79 |
| 4.0 | 39 | 61 |
| 5.0 | 52 | 48 |
| 7.0 | 82 | 18 |
| 8.0 | 97 | 3 |

- (iii) a bung and delivery tube

The bung needs to be the correct size to fit into each of the test-tubes.

The delivery tube should be made from two straight glass or plastic tubes joined by a short length of rubber tubing (approximately 15 cm) to give air-tight connections with the glass tubes.

The diagram below shows the apparatus set up. This is for **reference only**. Candidates will be fitting the bung and delivery tube into the test-tube themselves.



- (iv) a large test-tube, half-filled with water, labelled **water**
- (v) 1 cm thick fresh slice of potato from which $5 \times 1 \text{ cm}^3$ cubes can be cut

Use fresh potato tissue, not dried or frozen

- (vi) scalpel or other means of cutting potato
- (vii) white tile or other cutting surface
- (viii) timer or sight of a clock with a second hand
- (ix) tissues to wipe up spilt reaction mixture
- (x) ruler, mm

Please try a piece of potato in pH 5 or 7 with the hydrogen peroxide solution to test the activity of the tissue prior to the day of the examination.

Note: Candidates will be asked to wear safety glasses throughout this experiment.

Question 2

- (i) a mature, regular (actinomorphic), opened insect-pollinated dicotyledonous flower, labelled **W1**

This flower needs to be fresh and provided in a container of water to prevent drying out.

The flower needs to be large, more than 3 cm long; petals 4-6 (free or joined); 2-5 fused carpels; superior ovary.

Suggested flower families include:- Papaveraceae, Campanulaceae, Onograceae, Rosaceae, Ranunculaceae, Geraniaceae, Gentiaceae, etc.

- (ii) a later/older flower of the same species for sectioning the developing 'fruit' so that in TS the young seeds are visible, labelled **W2**
- (iii) scalpel or other sharp knife (also used in Question 1)
- (iv) tile or other cutting surface (also used in Question 1)
- (v) hand lens (preferably $\times 10$)
- (vi) forceps

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

REPORT ON PRACTICAL BIOLOGY

IGCSE

October/November Session 2009

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

- 1** Was there any difficulty experienced in providing necessary material?

Question 1 Give a set of results to indicate which pH was most active.

| pH | number of bubbles counted in 2 minutes |
|----|--|
| 3 | |
| 4 | |
| 5 | |
| 7 | |
| 8 | |

Question 2 Please identify the flower used in **W1** and **W2** and include a sketch or photograph.

- 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**.

