UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Advanced Level

BIOLOGY **9700/05**

Paper 5 Practical Test A2

October/November 2004

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.

Candidates must be provided with a microscope with a low power objective ($\frac{2}{3}$in = 16 mm = x10) and a high power objective ($\frac{1}{6}$in = 4 mm = x40). Each candidate must have the sole use of a microscope for 30 minutes.

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

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.

This document consists of **4** printed pages.

Instructions to Supervisors:

Question 1
Candidates will be expected to carry out an investigation into the action of the enzyme amylase on a suspension of starch.
Each candidate will require:

(i) 10 cm^3 of starch suspension, labelled **S**. This is prepared by creaming 1 g of starch with about 5 cm^3 of cold water. Add this to 80 cm^3 of boiling, distilled water. **It is important to boil well to ensure that no starch grains are left.** Stir well to obtain a uniform suspension. Make this up to 100 cm^3 with distilled water. Stir well then filter to ensure that no starch grains remain. It is preferable to use starch from a scientific supplier. If this is not available then corn flour or rice flour may be substituted. Please record any substitution on the report form attached.
Centres are advised to try this out well before hand.

(ii) A test-tube containing 10 cm^3 of amylase or diastase solution. The solution should be prepared just prior to the examination by dissolving 1 g of amylase powder in 100 cm^3 distilled water and labelled **A**.
The enzyme powder should be kept cool, but not frozen, and tested well in advance of the examination, in order to replace if needed.
To test out the enzyme, mix 3 cm^3 of starch suspension **S** with 1 cm^3 of amylase solution **A**. Drops of this mixture taken immediately should go black when mixed with iodine solution. Within one to five minutes after mixing an end point should be achieved where mixing sample with iodine solution no longer gives a blue/black colour.
If the end point is not reached within five minutes, then the concentration of the enzyme should be increased to 2 g or 5 g of amylase in 100 cm^3 distilled water. If the end point is still not reached within 5 minutes, fresh amylase or diastase must be obtained. In case of further difficulty, the starch solution could be diluted.
Centres are advised to try this out well before hand. Any changes should be recorded on the report form attached.

(iii) Iodine in potassium iodide solution, with dropper, labelled as such.

(iv) A dropper pipette.

(v) Access to sink or similar.

(vi) Two pipettes or syringes graduated to 10 cm^3 or one with a means of washing it.

(vii) Five test-tubes with rack.

(viii) A stirring rod.

(ix) A spotting tile (or a plain white tile at least 15 cm x 15 cm).

(x) A stop clock or stopwatch or sight of a clock with second hand.

Question 2

Each candidate will require:

(i) Slide **K1** (from Cambridge).

To be supplied by Cambridge

Slide **K1** (Question 2 and shared between two candidates).

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

REPORT ON PRACTICAL BIOLOGY

A Level

October/November Session 2004

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

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

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

(a) difficulties arising from faulty specimens or microscopes;

(b) accidents to apparatus or materials;

(c) assistance provided in case of colour blindness;

(d) any other information that is likely to assist the Examiner, especially if this cannot be discovered from the scripts.

All 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.

[Turn over

3 Enclose a plan of work benches with the scripts, giving details of the candidate numbers of the places occupied by the candidates for each session. 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 sent inside **each envelope**.