CAMBRIDGE INTERNATIONAL EXAMINATIONS

Joint Examination for the School Certificate and General Certificate of Education Ordinary Level

BIOLOGY 5090/3

PAPER 3 Practical Test

CONFIDENTIAL INSTRUCTIONS

OCTOBER/NOVEMBER SESSION 2002

1 hour 15 minutes

Great care should be taken to ensure 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**.

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 will require:

Slices of (Irish) potato tuber, approximately 2 mm thick and without peel, sufficient for candidates to cut 4 strips of tissue 70 mm long by 10 mm wide. The slices should be soaked in a 0.3 molar solution of salt (sodium chloride) (18 g sodium chloride per dm^3 of solution), for 1½ hours, but not more than 3 hours, before the examination and must be presented to candidates in a Petri dish in some of the same solution.

Candidates must not be told the nature of the solution in which the potato tissue has been soaked.

Four Petri dishes, or similar containers, (no lid necessary) approximately 100 mm diameter, containing at least 5 mm depth of the salt solutions specified below, labelled **A**, **B**, **C** and **D**. The solutions may be made up as follows.

A is 0.2 molar salt solution (12 g of salt per dm^3 of solution).
B is 0.4 molar salt solution (23 g of salt per dm^3 of solution).
C is 0.6 molar salt solution (35 g of salt per dm^3 of solution).
D is 0.8 molar salt solution (47 g of salt per dm^3 of solution).

Scalpel or sharp knife.
Paper towels.
Forceps (blunt).
Tile (white).
Ruler (mm).
Sight of clock.
Access to tap and sink.

There should be further supplies of all materials in reserve.

Question 2

Each candidate will require:

Specimen **W31** – a transverse slice of firm, (not over-ripe), Kiwi fruit (*Actinidia*), 5 mm thick and as freshly cut as possible. The slice should contain a full complement of seeds and should not be taken from the extreme ends of the fruit.

Specimen **W32** – a transverse slice of cucumber (*Cucumis*) 5 mm thick and as freshly cut as possible.

Hand lens.

Note For both Questions 1 and 2 the thickness of the slices of material is important.

PRELIMINARY INFORMATION FOR SUPERVISORS

Q.1 Candidates are required to investigate the effect of a range of salt (sodium chloride) solutions on potato tissue.

Q.2 This is an exercise in observation and recording by means of drawings of two different fruits.