
BIOLOGY

9700/36

Advanced Practical Skills 2

October/November 2015

CONFIDENTIAL INSTRUCTIONS

Great care should be taken to ensure that any confidential information given, including the identity of material on microscope slides where appropriate, does not reach the candidates either directly or indirectly.



If you have any problems or queries regarding these Instructions, please contact CIE
by e-mail: info@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 **8** printed pages.

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.

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:

- Eyepiece lens, $\times 10$ (equal to 16 mm or $\frac{2}{3}$ ")
- Low-power objective lens, $\times 10$ (equal to 16 mm or $\frac{2}{3}$ ")
- High-power objective lens, $\times 40$ (equal to 4 mm or $\frac{1}{6}$ ")
- Eyepiece graticule fitted within the eyepiece and visible in focus at the same time as the specimen.

To avoid confusion, Cambridge request that only the lenses specified above are fitted in the microscopes to be used in the examination. Any lenses which are **not** $\times 10$ or $\times 40$ should be removed or replaced.

Each candidate must have uninterrupted use of the microscope for at least one hour.

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 the 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

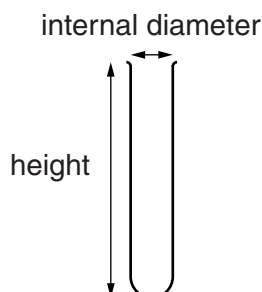
F = highly flammable substance

H = harmful or irritating substance

O = oxidising substance

T = toxic substance

N = harmful to environment



When small test-tubes are provided, it is expected that these are approximately 150 mm in height.

If other dimensions are required, these will be specified in the Apparatus list.

Centres are reminded that they are **not** permitted to open the question paper envelopes before the examination. Centres should also refer to the Handbook for Centres.

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 info@cie.org.uk, by **fax** to +44 1223 553558 or by **phone** to +44 1223 553554.

Confidential Instructions

No access to the Question Paper is permitted in advance of the examination.

Each candidate will require:

For both Questions

- mm ruler.

Question 1

- Solutions and reagents provided to the candidates should be supplied in a suitable beaker, or container. More of the solutions and reagents should be available if requested by candidates.
- All solutions should be provided to candidates at **room temperature**.
- Fresh **S1**, **W** and **I** are needed for each candidate.
- More of the pieces of onion should be available if requested by the candidates.
- All solutions and reagents should be disposed of according to local safety regulations.

The pieces of onion must be left in sodium chloride solution for at least one hour before the examination. The pieces of onion may be left overnight in covered containers.

Summary of solutions and reagents:

labelled	contents	hazard	volume /cm ³
S1	1.0 mol dm ⁻³ sodium chloride solution containing one piece of onion	none	at least 50 (enough to cover one piece of onion)
W	distilled water	none	at least 50
I	iodine solution as used for testing for starch	[H] harmful [H] irritant stains	at least 10

It is advisable to wear safety glasses/goggles and gloves when handling chemicals.

Preparation of solutions and reagents:

Solutions may be prepared the day before but should be kept in covered containers in a refrigerator. However, they should be supplied to candidates at **room temperature** for the examination.

- (i) **S1**, at least 50 cm³ of 1.0 mol dm⁻³ sodium chloride solution supplied in a beaker or container, labelled **S1**.
This is prepared by putting 58.5 g of sodium chloride in 500 cm³ of distilled water in a beaker or container and making up to 1 dm³ with distilled water.
- (ii) **W**, at least 50 cm³ of distilled water in a beaker or container, labelled **W**.
- [H] (iii) **I**, at least 10 cm³ of iodine solution as used for testing starch, in a suitable container with a pipette, labelled **I**.

Preparation of pieces of onion:

- Candidates should **not** be given red onion. Onions with white flesh should be used, either with dry brown scales (yellow onion) or with dry white scales (white onion).
 - The onions should be as fresh as possible to avoid the effects of storage.
 - The pieces of onion must be left in the solution for at least one hour before the examination or may be prepared the day before and left overnight in the solution with the containers covered to prevent evaporation.
- (i) Cut off the top and bottom of the onion.
- (ii) Remove the outer dry scales.
- (iii) Cut the onion into pieces as in Fig. 1.1.

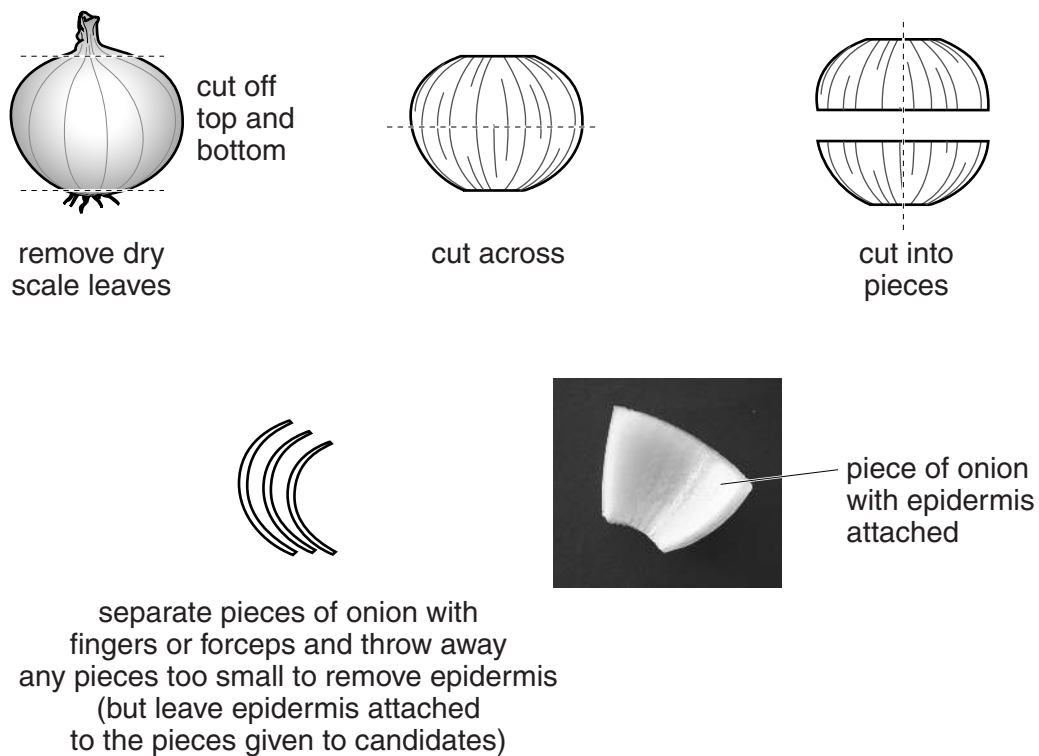


Fig. 1.1

- (iv) Place the number of pieces of onion required for all the candidates with some spares into large containers with enough of the sodium chloride solution, **S1** to submerge the onion pieces. Cover the containers.

Apparatus for each candidate should be clean.

Apparatus for each candidate	Quantity	✓
Pipettes, glass or plastic, for dispensing liquids	2	
Clean and dry microscope slides with coverslips	4	
Black card approximately 10 cm × 10 cm	1	
Paper towels	8	
Blunt forceps	1	
Mounted needle	1	
Scalpel or sharp blade	1	
White tile or other suitable surface for cutting	1	
Glass marker pen	1	
Microscope as described on page 2	1	
For each candidate: <ul style="list-style-type: none"> • the microscope must be set up on low power • the slide must not be left on the stage of the microscope. 		

During the examination, the Supervisor (**not** the Invigilator) should, **out of the sight of the candidates**, carry out **Question 1** using the same solutions and reagents as the candidates, in order to obtain results for **Q1 (b)(iv)**. These results should be written in the Supervisor's Report on page 8, **not** on a spare question paper.

The Supervisor's Report and the candidates' seating plan should be enclosed with the candidates' scripts.

Please ensure that, if the scripts are in several packets, a copy of the Supervisor's Report and the candidates' seating plan are enclosed with each packet of scripts.

The Invigilator should **not** carry out **Question 1**.

Question 2

Each candidate will require:

- (i) Scissors, suitable for cutting paper.

MATERIALS TO BE SUPPLIED BY CAMBRIDGE

- (i) Question papers.

Note: no slide is supplied

RETURN OF EXAMINATION MATERIALS TO CAMBRIDGE

There is no material to return to Cambridge.

SUPERVISOR'S REPORT and SEATING PLAN

The teacher responsible for the examination is asked to fill in the Supervisor's Report in these Confidential Instructions.

For Centres where more than one script packet is used, there must be a copy of the completed Supervisor's Report and the candidates' seating plan in each script packet. These Supervisors' Reports are essential in order to allow the Examiner to assess all candidates as fairly as possible and should always be completed by every Centre.

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

SUPERVISOR'S REPORT

October/November 2015

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 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 the Handbook for Centres.

3. During the examination, the Supervisor should, **out of the sight of the candidates**, carry out **Question 1** using the same solutions and reagents as the candidates. The results for **Question 1(b)(iv)** should be written in the Supervisor's Report, which should be enclosed with the candidates' scripts. If the scripts are in several packets, please ensure that a copy of the Supervisor's Report is enclosed with each packet of scripts. The Invigilator should **not** carry out **Question 1**.
4. Enclose a **seating plan** of work benches with the scripts, giving details of the candidate numbers of the places occupied by the candidates for **each question**. Use **separate** paper for this.

Declaration (to be signed by the Principal or the Examinations Officer)

The preparation of this practical examination has been carried out so as to maintain the security of the examination.

Signed

Name (in block capitals)

Centre number (of enclosed scripts)

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
- appropriate seating plan(s) are sent inside **each envelope**.

Temperature of examination room °C

Results for **Question 1(b)(iv)**

