UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education
Advanced Subsidiary Level and Advanced Level

BIOLOGY **9700/31**

Advanced Practical Skills 1 **May/June 2012**

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.

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

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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.** Centres are reminded that candidates are expected to follow the instructions on the question paper and record all their results. They will not be penalised 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.

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, × 10 (equal to 16 mm or $\frac{2}{3}$″)
- Low-power objective lens, × 10 (equal to 16 mm or $\frac{2}{3}$″)
- High-power objective lens, × 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.

Each candidate must have sole, uninterrupted, use of the microscope for at least 55 minutes.

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

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

Centres are reminded that they are **not** permitted to open the Question Paper envelopes before the examination. Centres are also referred to the Handbook for Centres.

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Confidential Instructions

Each candidate should have a **mm ruler** for use in both questions.

Each candidate will require:

Question 1

- The pieces of onion must be soaked in the concentrations of sodium chloride solution for at least one hour before the examination. The pieces of onion may be left to soak overnight in covered containers to prevent evaporation. More of the pre-soaked pieces of onion should be available if requested by candidates.
- Fresh **S1**, **S2**, **S3** and **W** are needed for each candidate.
- Solutions and reagents provided to the candidates should be supplied in a suitable beaker, or container, for removal of the solution using a syringe.

Summary of solutions and reagents:

labelled	contents	hazard	concentration / mol dm^{-3}	volume / cm^3
S1	sodium chloride solution containing one piece of onion	none	1.00	approximately 80 to 90 (enough to cover one piece of onion)
S2	sodium chloride solution containing one piece of onion	none	0.25	approximately 80 to 90 (enough to cover one piece of onion)
S3	sodium chloride solution containing one piece of onion	none	0.50	approximately 80 to 90 (enough to cover one piece of onion)
W	distilled water	none	–	at least 20

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

Preparation of solutions and reagents:

(i) **S1**, at least 80 cm^3 to 90 cm^3 of 1.00 mol dm^{-3} sodium chloride solution in a beaker or container, labelled **S1**.

This is prepared by dissolving 58.5 g of sodium chloride in 500 cm^3 of distilled water and making up to 1 dm^3 with distilled water.
This is sufficient for 10 candidates.

(ii) **S2**, at least 80 cm^3 to 90 cm^3 of 0.25 mol dm^{-3} sodium chloride solution in a beaker or container, labelled **S2**.

This is prepared by dissolving 14.6 g of sodium chloride in 500 cm^3 of distilled water and making up to 1 dm^3 with distilled water.
This is sufficient for 10 candidates.

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(iii) **S3**, at least 80 cm^3 to 90 cm^3 of 0.50 mol dm^{-3} sodium chloride solution in a beaker or container, labelled **S3**.

This is prepared by dissolving 29.3 g of sodium chloride in 500 cm^3 of distilled water and making up to 1 dm^3 with distilled water.
This is sufficient for 10 candidates.

(iv) **W**, at least 20 cm^3 of distilled water in a beaker or container, labelled **W**.

All solutions and reagents should be disposed of according to local safety regulations.

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 solutions for at least one hour before the examination. The pieces of onion may be prepared the day before and left overnight in the solutions 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.

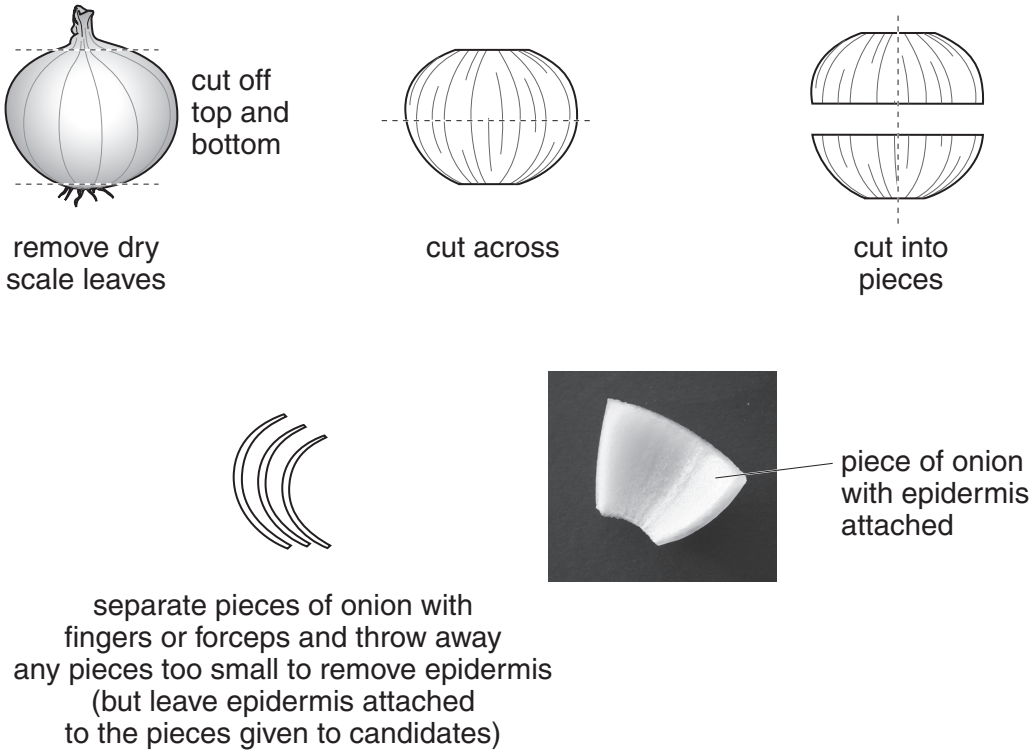


Fig. 1.1

(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 solutions, **S1**, **S2** and **S3** to submerge the onion pieces. Cover the containers.

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Apparatus for each candidate:

Apparatus	Quantity	✓
2 cm^3 or 5 cm^3 syringe with the means to wash it out (note: needles are **not** required and should **not** be given to candidates)	1	
Glass pipette with teat or plastic pipette	1	
Container with tap water, labelled **For washing**	1	
Container, labelled **For waste**	1	
Paper towels	8	
White tile	1	
Scalpel or sharp blade	1	
Blunt forceps	1	
Seeker or mounted needle	2	
Glass marker pen	1	
Safety goggles/glasses	1	
Microscope slides and coverslips	3	
Microscope with: • Eyepiece lens, × 10 (equal to 16 mm or $\frac{2}{3}''$) • Low-power objective lens, × 10 (equal to 16 mm or $\frac{2}{3}''$) • High-power objective lens, × 40 (equal to 4 mm or $\frac{1}{6}''$) • Eyepiece graticule fitted in eyepiece lens	1	

Each candidate must have sole, uninterrupted use of the microscope for 55 minutes. Therefore, half of the candidates should start on **Question 1** and the other half should start on **Question 2**.

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. These results should be written in the Supervisor's Report (**not** on a spare Question Paper) which should be enclosed with the candidates' scripts. Please ensure that if the scripts are in several packets that a copy of the Supervisor's Report is enclosed with each packet of scripts. The Invigilator should **not** carry out **Question 1**.

Question 2

- Fresh sweet banana (*Musa* sp.) and iodine solution are needed for each candidate.
  More of the pieces of sweet banana should be available if requested by candidates.
- Solutions and reagents provided to the candidates should be supplied in a suitable beaker, or container, for removal of the solution using a pipette (teat).

Summary of solutions and reagents:

labelled	contents	hazard	concentration / mol dm^{-3}	volume / cm^3
iodine	iodine in potassium iodide solution	[H] irritant	as used for starch test	at least 10

[H] (i) **iodine**, at least 10 cm^3 iodine in potassium iodide solution (as used in starch test) in a bottle or container with a pipette (teat), labelled **iodine**.

(ii) **banana**, one piece of sweet banana, approximately 4 cm in length in a shallow container or Petri dish, labelled **banana**.

Yellow sweet bananas which are not too ripe and which give a positive test for starch should be selected.
Remove 2 cm at each end of the banana, then cut transversely, including the outer skin to give approximately 4 cm lengths.
The pieces of sweet banana should be cut and put out just before the start of the question for each candidate.

Apparatus for each candidate:

Apparatus	Quantity	✓
Knife or scalpel	1	
Glass rod	1	
Ruler in mm	1	
Paper towel	2	

During the examination, the Supervisor should, **out of the sight of the candidates**, carry out **Question 2** using the same reagent as the candidates. These results should be written in the Supervisor's Report (**not** on a spare Question Paper) which should be enclosed with the candidates' scripts. Please ensure that if the scripts are in several packets that a copy of the Supervisor's Report is enclosed with each packet of scripts. The Invigilator should **not** carry out **Question 2**.

MATERIALS TO BE SUPPLIED BY CAMBRIDGE

(i) Question papers

note: no slide is required.

RETURN OF EXAMINATION MATERIALS TO CAMBRIDGE

There is no material to return to Cambridge.

REPORT FORM

The teacher responsible for the examination is asked to fill in the Report Form in these Confidential Instructions. For Centres where more than one script package is used, there must be a copy of the completed Report Form in each script package.

These Report Forms are vital in order to allow the examiners to assess all candidates as fairly as possible and should always be completed by every Centre.

A copy of the seating plan for the examination room must also be enclosed in each script package.

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

REPORT ON PRACTICAL BIOLOGY

A Level

May/June Session 2012

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 Part 6 of the Handbook for Centres.

3. During the examination, the Supervisor should, **out of sight of the candidates**, carry out **Question 1** and **Question 2** using the same solutions and reagents as the candidates. These results should be written in the Supervisor's Report, which should be enclosed with the candidates' scripts. Please ensure that, if the scripts are in several packets, a copy of the Supervisor's Report is enclosed with each packet of scripts. The Invigilator should **not** carry out **Question 1** or **Question 2**.

Temperature of examination room ..... °C

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[Turn over

(a) *Results of **Question 1**:*

(b) *Results of **Question 2**:*

4. Enclose a plan of work benches with the scripts, giving details of the candidate numbers for the places occupied by the candidates for each session on a separate piece of 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 (for 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 and the appropriate seating plan(s) are sent inside **each envelope**.

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UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education
Advanced Subsidiary Level and Advanced Level

BIOLOGY **9700/32**

Advanced Practical Skills 2 **May/June 2012**

CONFIDENTIAL INSTRUCTIONS

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by e-mail: 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.

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

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

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, × 10 (equal to 16 mm or $\frac{2}{3}$″)
- Low-power objective lens, × 10 (equal to 16 mm or $\frac{2}{3}$″)
- High-power objective lens, × 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.

Each candidate must have sole, uninterrupted, use of the microscope for at least 55 minutes.

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

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

Centres are reminded that they are **not** permitted to open the Question Paper envelopes before the examination. Centres are also referred to the Handbook for Centres.

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Confidential Instructions

Each candidate should have a **mm ruler** for use in both questions.

Each candidate will require:

Question 1

- Fresh **E**, **iodine** and **W** are needed for each candidate.
- Solutions and reagents provided to the candidates should be supplied in a suitable beaker, or container, for removal of the solution using a syringe.
- 0.01% iodine solution must be prepared as described below and not more than one hour before the start of Question 1 for each candidate.

Summary of solutions and reagents:

labelled	contents	hazard	percentage concentration	volume /cm^3
E	amylase solution	[H] harmful irritant	1.0	at least 50
iodine	iodine in potassium iodide solution	[H] harmful irritant	0.01 **this must be prepared as described below**	at least 5
W	distilled water	none	–	at least 50

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

Preparation of solutions and reagents:

[H] (i) **iodine**, of 0.01% iodine solution in a large test-tube to a depth of approximately 5 cm, labelled **iodine**.

This is prepared by dissolving 2.0 g of potassium iodide in 80 cm^3 of distilled water in a beaker or container and making up to 100 cm^3 with distilled water.
Then add 1.0 g of iodine crystals and mix thoroughly. This stock solution can be made up the day before the examination.

Prepare a 0.01% iodine solution by taking 1 cm^3 of this stock solution and making up to 100 cm^3 with distilled water.

Prepare the 0.01% iodine solution **no more than one hour** before the start of Question 1 for each candidate, to prevent the loss of colour. Keep solution away from direct sunlight.

This is sufficient for 20 candidates.

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[H] (ii) **E**, at least 50 cm^3 of 1% amylase solution in a beaker or container, labelled **E**.

This is prepared by adding 1 cm^3 of alpha amylase (fungal) (supplied by Cambridge) to 99 cm^3 of distilled water.

This is sufficient for 2 candidates.

(iii) **W**, at least 50 cm^3 of distilled water in a beaker or container, labelled **W**.

All solutions and reagents should be disposed of according to local safety regulations.

Apparatus for each candidate:

Apparatus	Quantity	✓
10 cm^3 syringe (note: needles are **not** required and should **not** be given to candidates)	2	
2 cm^3 or 5 cm^3 syringe (note: needles are **not** required and should **not** be given to candidates)	1	
Beakers or containers to hold 20 cm^3 volume (should allow a liquid to be poured into a test-tube)	6	
Container with tap water, labelled **For washing**	1	
Container, labelled **For waste**	1	
Paper towels	8	
White tile	1	
Test-tube to allow a 1 cm × 1 cm square of paper to fit easily into the test-tube	1	
Test-tube rack or container to hold 1 large test-tube (containing **iodine**) and 1 test-tube as above	1	
Splints – wooden	12	
Scalpel or sharp blade for cutting splint	1	
Ruler in mm	1	
Scissors for cutting paper	1	
Stopclock, stopwatch or sight of a clock with a second hand	1	
Glass marker pen	1	
Safety goggles/glasses	1	

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. These results should be written in the Supervisor's Report (**not** on a spare Question Paper) which should be enclosed with the candidates' scripts. Please ensure that if the scripts are in several packets that a copy of the Supervisor's Report is enclosed with each packet of scripts. The Invigilator should **not** carry out **Question 1**.

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Question 2

(i) Slide **J1** (supplied by Cambridge)

(ii) Microscope with:

- Eyepiece lens, × 10 (equal to 16 mm or $\frac{2}{3}$″)
- Low-power objective lens, × 10 (equal to 16 mm or $\frac{2}{3}$″)
- High-power objective lens, × 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.

On receipt of the slides, please check that they are labelled **J1** and that all the slides are intact. The identity of material on the slides is **confidential** and must **not** be disclosed to candidates.

Each candidate must have sole, uninterrupted use of the microscope for 55 minutes.

The number of slides supplied by Cambridge will be equal to half the candidate entry. Therefore, half of the candidates should start on **Question 1** and the other half should start on **Question 2**.

MATERIALS TO BE SUPPLIED BY CAMBRIDGE

(i) Question Papers

(ii) Slide **J1**

(iii) Amylase solution (fungal)

RETURN OF EXAMINATION MATERIALS TO CAMBRIDGE

Immediately after the examination the microscope slides **must** be:

- returned to Cambridge in the containers in which they were received, using the self-adhesive label. They must **not** be included in the package of scripts.

Or

- purchased using the order form enclosed with the slides, which should be completed and returned to Cambridge. This must **not** be included in the package of scripts.

Slides and boxes will be charged at the rate of £3 per slide and £1 per box.
If the items are not returned or purchased by the deadline stated on the order form they will be charged at £3.50 per slide plus £1 per box.

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A Level

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*Results of **Question 1**:*

Temperature of examination room ..... °C

4. Enclose a plan of work benches with the scripts, giving details of the candidate numbers for the places occupied by the candidates for each session on a separate piece of 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 (for enclosed scripts) .....

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BIOLOGY **9700/33**

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Candidates must be provided with a microscope with:

- Eyepiece lens, × 10 (equal to 16 mm or $\frac{2}{3}''$)
- Low-power objective lens, × 10 (equal to 16 mm or $\frac{2}{3}''$)
- High-power objective lens, × 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.

Each candidate must have sole, uninterrupted, use of the microscope for at least 55 minutes.

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Confidential Instructions

Each candidate should have a **mm ruler** for use in both questions.

Each candidate will require:

Question 1

- The pieces of onion must be soaked in each of the concentrations of sodium chloride solution for at least one hour before the examination. The pieces of onion may be left to soak overnight in covered containers to prevent evaporation. More of the pre-soaked pieces of onion should be available if requested by candidates.
- Fresh **S1**, **S2**, **S3** and **S4** are needed for each candidate.
- Solutions and reagents provided to the candidates should be supplied in a suitable beaker, or container, for removal of the solution using a syringe.

Summary of solutions and reagents:

labelled	contents	hazard	concentration / mol dm^{-3}	volume / cm^3
S1	sodium chloride solution containing one piece of onion	none	0.8	approximately 80 to 90 (enough to cover one piece of onion)
S2	sodium chloride solution containing one piece of onion	none	0.4	approximately 80 to 90 (enough to cover one piece of onion)
S3	sodium chloride solution containing one piece of onion	none	0.2	approximately 80 to 90 (enough to cover one piece of onion)
S4	sodium chloride solution containing one piece of onion	none	0.3	approximately 80 to 90 (enough to cover one piece of onion)

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

Preparation of solutions and reagents:

(i) **S1**, at least 80 cm^3 to 90 cm^3 of 0.8 mol dm^{-3} sodium chloride solution in a beaker or container, labelled **S1**.

This is prepared by dissolving 46.8 g of sodium chloride in 500 cm^3 of distilled water and making up to 1 dm^3 with distilled water.
This is sufficient for 10 candidates.

(ii) **S2**, at least 80 cm^3 to 90 cm^3 of 0.40 mol dm^{-3} sodium chloride solution in a beaker or container, labelled **S2**.

This is prepared by dissolving 23.4 g of sodium chloride in 500 cm^3 of distilled water and making up to 1 dm^3 with distilled water.
This is sufficient for 10 candidates.

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(iii) **S3**, at least 80 cm^3 to 90 cm^3 of 0.20 mol dm^{-3} sodium chloride solution in a beaker or container, labelled **S3**.

This is prepared by dissolving 11.7 g of sodium chloride in 500 cm^3 of distilled water and making up to 1 dm^3 with distilled water.
This is sufficient for 10 candidates.

(iv) **S4**, at least 80 cm^3 to 90 cm^3 of 0.30 mol dm^{-3} sodium chloride solution in a beaker or container, labelled **S4**.

This is prepared by dissolving 17.6 g of sodium chloride in 500 cm^3 of distilled water and making up to 1 dm^3 with distilled water.
This is sufficient for 10 candidates.

All solutions and reagents should be disposed of according to local safety regulations.

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 solutions for at least one hour before the examination. The pieces of onion may be prepared the day before and left overnight in the solutions, 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.

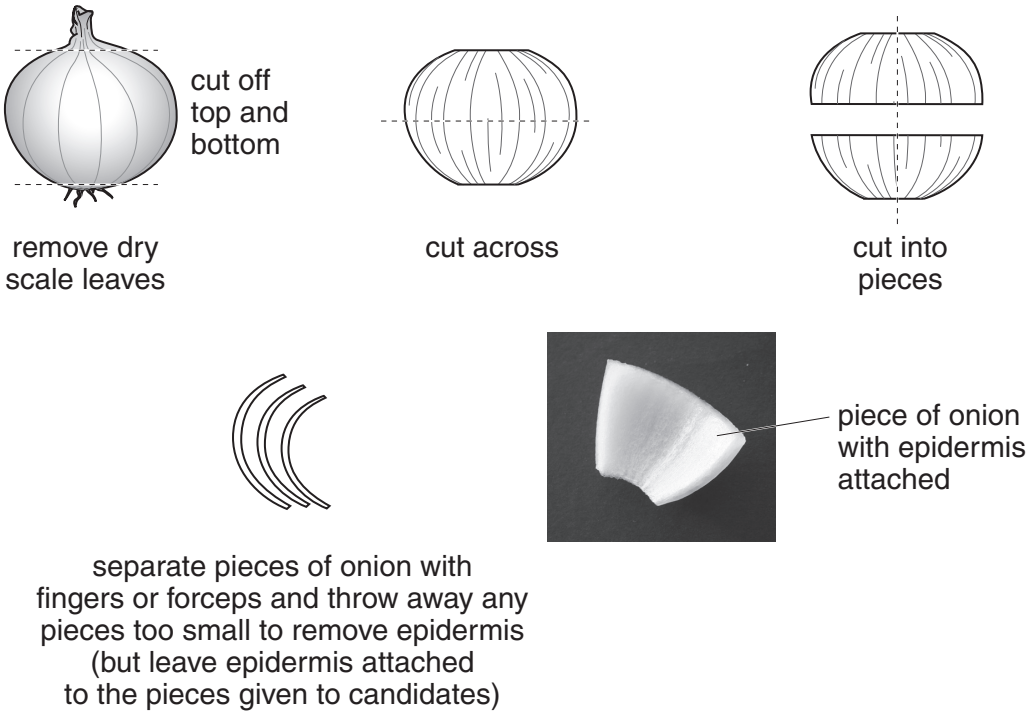


Fig. 1.1

(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 solutions, **S1**, **S2**, **S3** and **S4** to submerge the onion pieces. Cover the containers.

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Apparatus for each candidate:

Apparatus	Quantity	✓
Glass pipette with teat or plastic pipette	1	
Container with tap water, labelled **For washing**	1	
Container, labelled **For waste**	1	
Paper towels	8	
Microscope with: • Eyepiece lens, × 10 (equal to 16 mm or $\frac{2}{3}$″) • Low-power objective lens, × 10 (equal to 16 mm or $\frac{2}{3}$″) • High-power objective lens, × 40 (equal to 4 mm or $\frac{1}{6}$″) • Eyepiece graticule fitted in eyepiece lens	1	
Microscope slides and coverslips	4	
White tile	1	
Scalpel or sharp blade	1	
Blunt forceps	1	
Seeker or mounted needle	2	
Glass marker pen	1	
Safety goggles/glasses	1	

Each candidate must have sole, uninterrupted use of the microscope for 55 minutes. Therefore, half of the candidates should start on **Question 1** and the other half start on **Question 2**.

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. These results should be written in the Supervisor's Report (**not** on a spare Question Paper) which should be enclosed with the candidates' scripts. Please ensure that if the scripts are in several packets that a copy of the Supervisor's Report is enclosed with each packet of scripts. The Invigilator should **not** carry out **Question 1**.

Question 2

- Fresh **Y**, **O**, **W** are needed for each candidate.

Summary of solutions and reagents:

labelled	contents	volume / cm^3
Y	egg yolk in a syringe (note: needles are **not** required and should **not** be given to candidates)	2
O	vegetable oil	20
W	distilled water	40

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

Preparation of solutions and reagents:

(i) **Y**, 2 cm^3 of egg yolk in a 2.5/2.0 cm^3 syringe, labelled **Y**. Put the syringe in a small beaker or container to keep upright. The syringe must be able to fit into the test-tube provided.

This is prepared by cracking open an egg (hen's egg or similar) and separating the egg yolk from the white. Use the syringe, **Y** to suck up 2 cm^3 of egg yolk.
It is recommended to wash your hands after handling the raw eggs.
Depending on yolk size, one egg is sufficient for at least 5 candidates.

(ii) **O**, 20 cm^3 of vegetable cooking oil (for example sunflower oil, olive oil, grapeseed oil) in a small beaker or container, labelled **O**.

(iii) **W**, at least 40 cm^3 of distilled water in a beaker or container, labelled **W**.

All solutions should be disposed of according to local safety regulations.

Apparatus for each candidate:

Apparatus	Quantity	✓
10 cm^3 syringe (note: needles are **not** required and should **not** be given to candidates)	1	
Container with tap water, labelled **For washing**	1	
Container, labelled **For waste**	1	
Paper towels	8	
Test-tube	2	
Bung to fit the test-tube	1	
Test-tube rack or container to hold 2 test-tubes	1	
Hand lens	1	
Ruler in mm	1	
Stopclock, stopwatch or sight of a clock with a second hand	1	
Glass marker pen (can be the same marker as used for question 1)	1	
Safety goggles/glasses	1	

During the examination, the Supervisor should, **out of the sight of the candidates**, carry out **Question 2** using the same reagent as the candidates. These results should be written in the Supervisor's report (**not** on a spare Question Paper) which should be enclosed with the candidates' scripts. Please ensure that if the scripts are in several packets that a copy of the Supervisor's report is enclosed with each packet of scripts. The Invigilator should **not** carry out **Question 2**.

MATERIALS TO BE SUPPLIED BY CAMBRIDGE

(i) Question Papers

note: no slide is required.

RETURN OF EXAMINATION MATERIALS TO CAMBRIDGE

There is no material to return to Cambridge.

REPORT FORM

The teacher responsible for the examination is asked to fill in the Report Form in these Confidential Instructions. For Centres where more than one script package is used, there must be a copy of the completed Report Form in each script package.

These Report Forms are vital in order to allow the examiners to assess all candidates as fairly as possible and should always be completed by every Centre.

A copy of the seating plan for the examination room must also be enclosed in each script package.

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

REPORT ON PRACTICAL BIOLOGY

A Level

May/June Session 2012

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 Part 6 of the Handbook for Centres.

3. During the examination, the Supervisor should, **out of sight of the candidates**, carry out **Question 1** and **Question 2**, using the same solutions and reagents as the candidate. These results 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** or **Question 2**.

Temperature of examination room ..... °C

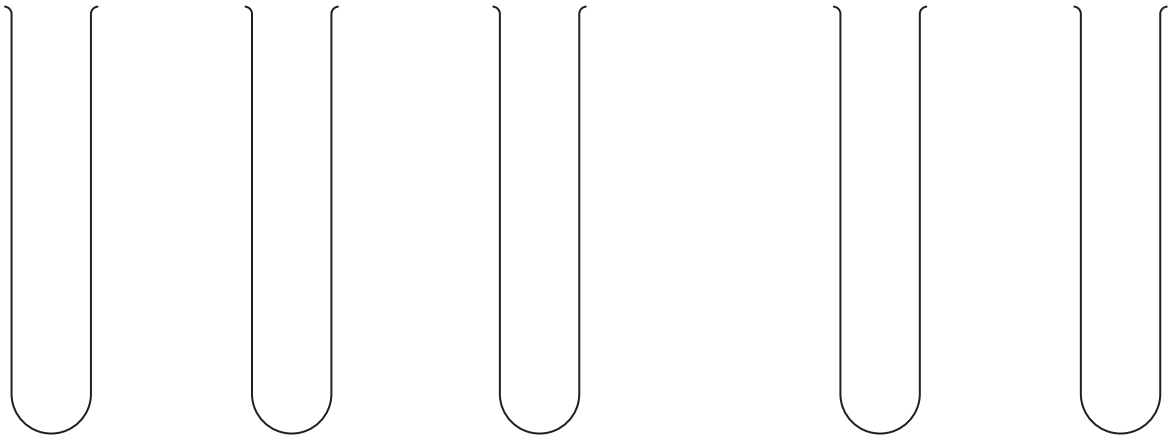
© UCLES 2012

[Turn over

*Results of **Question 1**:*

*Results of **Question 2**:*

P **Q** **Q** (with egg yolk) **P** **Q** (with egg yolk)



4. Enclose a plan of work benches with the scripts, giving details of the candidate numbers for the places occupied by the candidates for each session on a separate piece of 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 (for 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 and the appropriate seating plan(s) are sent inside **each envelope**.

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UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education
Advanced Subsidiary Level and Advanced Level

BIOLOGY **9700/34**

Advanced Practical Skills 2 **May/June 2012**

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.

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If you have any problems or queries regarding these Instructions, please contact CIE
by e-mail: 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.

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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.** Centres are reminded that candidates are expected to follow the instructions on the Question Paper and record all their results. They will not be penalised 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.

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, × 10 (equal to 16 mm or $\frac{2}{3}''$)
- Low-power objective lens, × 10 (equal to 16 mm or $\frac{2}{3}''$)
- High-power objective lens, × 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.

Each candidate must have sole, uninterrupted, use of the microscope for at least 55 minutes.

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

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

Centres are reminded that they are **not** permitted to open the Question Paper envelopes before the examination. Centres are also referred 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 international@cie.org.uk, by **fax** to +44 1223 553558 or by **phone** to +44 1223 553554.

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Confidential Instructions

Each candidate should have a **mm ruler** for use in both questions.

Each candidate will require:

Question 1

- Fresh **H**, **W** and **P** are needed for each candidate.
  More of the solutions should be available if requested by candidates.

- Solutions and reagents provided to the candidates should be supplied in a suitable beaker, or container, for removal of the solution using a syringe.

Summary of solutions and reagents:

labelled	contents	hazard	percentage concentration	volume /cm^3
H	hydrogen peroxide solution	[H] harmful irritant	1.5	at least 100
W	distilled water	none	–	at least 80
P	plant extract solution	none	–	at least 50

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

Preparation of solutions and reagents:

[H] **(i)** **H**, at least 100 cm^3 of 1.5% (5 volumes) hydrogen peroxide solution in a beaker or container, labelled **H**.
The beaker or container should allow the hydrogen peroxide solution to be poured easily into a test-tube.

H must be put out immediately before the examination and kept covered.

It was found using this concentration that suitable results were obtained, see below.

The concentration can be obtained by putting 25 cm^3 of 6% (20 volumes) hydrogen peroxide solution in a beaker or container and making up to 100 cm^3 with distilled water.

This is sufficient for 1 candidate.

(ii) **W**, at least 80 cm^3 of distilled water in a beaker or container, labelled **W**.

(iii) **P**, at least 50 cm^3 of plant extract solution, in a beaker or container, labelled **P**.

The plant extract can be prepared using 45 g of peeled cassava or peeled sweet potato or peeled white potato (for example Irish). Cut the plant material into small pieces and then grind in a pestle and mortar or liquidise with 75 cm^3 of water. Strain the mixture through a fine sieve and retain the liquid plant extract. This should produce approximately 60 cm^3 of plant extract solution. **Test P as described on page 4.**

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The activity of the plant extract solution should be tested before the examination by putting a 1 cm × 1 cm piece of filter paper into the extract. Fill a large test-tube with the hydrogen peroxide solution to within 2 cm of the top. Drop the square of filter paper into the hydrogen peroxide solution. Start timing and record when the square returns to the surface.

The time should be between 10 and 40 seconds. If it is too fast, decrease the concentration of the plant extract by diluting the extract. If it is too slow, increase the mass of plant material used for the extract.

All solutions and reagents should be disposed of according to local safety regulations.

Apparatus for each candidate:

Apparatus	Quantity	✓
Filter paper, sufficient for the candidate to cut at least 50 squares (1 cm × 1 cm) – in a shallow container	1	
Scissors for cutting paper	1	
Ruler mm	1	
10 cm^3 syringe (note: needles are **not** required and should **not** be given to candidates)	2	
2 cm^3 or 5 cm^3 syringe (note: needles are **not** required and should **not** be given to candidates)	1	
Large test-tube	1	
Test-tube rack or container to hold large test-tubes	1	
Container with tap water, labelled **For washing**	1	
Container, labelled **For waste**	1	
Blunt forceps	1	
Mounted needle or seeker	1	
Paper towels	8	
Beakers or containers to hold 20 cm^3 volume	6	
Stopclock, stopwatch or sight of a clock with a second hand	1	
Glass marker pen	1	
Safety goggles/glasses	1	

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. These results should be written in the Supervisor's Report (**not** on a spare Question Paper) which should be enclosed with the candidates' scripts. Please ensure that if the scripts are in several packets that a copy of the Supervisor's Report is enclosed with each packet of scripts. The Invigilator should **not** carry out **Question 1**.

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Question 2

(i) Slide **K1** (supplied by Cambridge)

(ii) Microscope with:

- Eyepiece lens, × 10 (equal to 16 mm or $\frac{2}{3}$″)
- Low-power objective lens, × 10 (equal to 16 mm or $\frac{2}{3}$″)
- High-power objective lens, × 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.

On receipt of the slides, please check that they are labelled **K1** and that all the slides are intact. The identity of material on the slides is **confidential** and must **not** be disclosed to candidates.

Each candidate must have sole, uninterrupted use of the microscope for 55 minutes.

The number of slides supplied by Cambridge will be equal to half the candidate entry. Therefore, half of the candidates should start on **Question 1** and the other half should start on **Question 2**.

MATERIALS TO BE SUPPLIED BY CAMBRIDGE

(i) Question Papers

(ii) Slide **K1**

RETURN OF EXAMINATION MATERIALS TO CAMBRIDGE

Immediately after the examination the microscope slides **must** be:

- returned to Cambridge in the containers in which they were received, using the self-adhesive label. They must **not** be included in the package of scripts.

Or

- purchased using the order form enclosed with the slides, which should be completed and returned to Cambridge. This must **not** be included in the package of scripts.

Slides and boxes will be charged at the rate of £3 per slide and £1 per box.
If the items are not returned or purchased by the deadline stated on the order form they will be charged at £3.50 per slide plus £1 per box.

REPORT FORM

The teacher responsible for the examination is asked to fill in the Report Form in these Confidential Instructions. For Centres where more than one script package is used, there must be a copy of the completed Report Form in each script package.

These Report Forms are vital in order to allow the examiners to assess all candidates as fairly as possible and should always be completed by every Centre.

A copy of the seating plan for the examination room must also be enclosed in each script package.

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

REPORT ON PRACTICAL BIOLOGY

A Level

May/June Session 2012

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 Part 6 of the Handbook for Centres.

3. During the examination, the Supervisor should, **out of sight of the candidates**, carry out **Question 1**, using the same solutions and reagents as the candidates. These results 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**.

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*Results of **Question 1**:*

Temperature of examination room ..... °C

4. Enclose a plan of work benches with the scripts, giving details of the candidate numbers for the places occupied by the candidates for each session on a separate piece of 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 (for 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 and the appropriate seating plan(s) are sent inside **each envelope**.

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UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education
Advanced Subsidiary Level and Advanced Level

BIOLOGY **9700/35**

Advanced Practical Skills 1 **May/June 2012**

CONFIDENTIAL INSTRUCTIONS

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If you have any problems or queries regarding these Instructions, please contact CIE
by e-mail: 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 **9** printed pages and **3** blank pages.

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

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

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, × 10 (equal to 16 mm or $\frac{2}{3}''$)
- Low-power objective lens, × 10 (equal to 16 mm or $\frac{2}{3}''$)
- High-power objective lens, × 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.

Each candidate must have sole, uninterrupted, use of the microscope for at least 55 minutes.

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

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

Centres are reminded that they are **not** permitted to open the Question Paper envelopes before the examination. Centres are also referred to the Handbook for Centres.

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Confidential Instructions

Each candidate should have a **mm ruler** for use in both questions.

Each candidate will require:

Question 1

- The pieces of sweet potato must be soaked in the concentrations of sodium chloride solution or water for at least one hour before the examination. The pieces of sweet potato may be left to soak overnight in covered containers to prevent evaporation. More of the pre-soaked pieces of sweet potato should be available if requested by candidates.
- Fresh **P1**, **P2**, **P3**, **P4**, **W** and page with protractors are needed for each candidate.
- Solutions and reagents provided to the candidates should be supplied in a suitable beaker, or container, for removal of the solution using a syringe.

Summary of solutions and reagents:

labelled	contents	hazard	concentration / mol dm^{-3}	volume / cm^3
P1	sodium chloride solution containing two pieces of sweet potato	none	1.00	approximately 80 to 90 (enough to cover two pieces of sweet potato)
P2	sodium chloride solution containing two pieces of sweet potato	none	0.25	approximately 80 to 90 (enough to cover two pieces of sweet potato)
P3	sodium chloride solution containing two pieces of sweet potato	none	0.50	approximately 80 to 90 (enough to cover two pieces of sweet potato)
P4	distilled water containing two pieces of sweet potato	none	–	approximately 80 to 90 (enough to cover two pieces of sweet potato)
W	distilled water	none	–	at least 400

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

Preparation of solutions and reagents:

(i) **P1**, at least 80 cm^3 to 90 cm^3 of 1.00 mol dm^{-3} sodium chloride solution in a beaker or container, labelled **P1**.

This is prepared by dissolving 58.5 g of sodium chloride in 500 cm^3 of distilled water and making up to 1 dm^3 with distilled water.
This is sufficient for 10 candidates.

(ii) **P2**, at least 80 cm^3 to 90 cm^3 of 0.25 mol dm^{-3} sodium chloride solution in a beaker or container, labelled **P2**.

This is prepared by dissolving 14.6 g of sodium chloride in 500 cm^3 of distilled water and making up to 1 dm^3 with distilled water.
This is sufficient for 10 candidates.

(iii) **P3**, at least 80 cm^3 to 90 cm^3 of 0.50 mol dm^{-3} sodium chloride solution in a beaker or container, labelled **P3**.

This is prepared by dissolving 29.3 g of sodium chloride in 500 cm^3 of distilled water and making up to 1 dm^3 with distilled water.
This is sufficient for 10 candidates.

(iv) **P4**, at least 80 cm^3 to 90 cm^3 of distilled water in a beaker or container, labelled **P4**.

Please note candidates are told on the Question Paper that this is a concentration of sodium chloride solution, not distilled water. This is correct and has been selected to help the candidates.

(v) **W**, at least 400 cm^3 of distilled water in a beaker or container, labelled **W**.

All solutions and reagents should be disposed of according to local safety regulations.

Preparation of pieces of sweet potato:

Sweet potatoes should be as fresh as possible to avoid the effects of storage. The sweet potatoes should not have been stored or refrigerated for a long period of time.

The pieces of sweet potato must be left in the solutions for at least one hour before the examination. The pieces of sweet potato may be prepared the day before and left overnight in the solutions with the containers covered to prevent evaporation.

The outer skin should be removed.

Each piece of sweet potato should have the same cross-sectional area, 1.0 cm × 0.5 cm.

Slices of plant tissue can be cut with a large kitchen knife and strips produced using a scalpel. Please do not use cork borers as this may compress the tissues.

The pieces should be at least 6 cm long but no longer than 9 cm and of different lengths. Two pieces of sweet potato are needed for the water and for each of the concentrations of sodium chloride solution. Each candidate is provided with a total of eight pieces of sweet potato but candidates may request further samples.

Put the pieces of sweet potato into large beakers or containers labelled **P1**, **P2**, **P3** and **P4**. Make sure all the pieces are submerged in the liquid. Cover the beakers or containers and leave for at least one hour.

Just before the examination, for each candidate put two pieces of sweet potato of different lengths into each labelled container and submerge into the same concentration of sodium chloride solution or water as the solutions in which they had been soaked.

Preparation of paper protractors:

Each candidate will require one copy of the page with four protractors, labelled '**Protractors for measuring**' copied from page 7 of these Instructions.
This page should be photocopied and must be placed in a plastic wallet or laminated for use in the examination. Each candidate should be provided with their own copy which they must use.

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Apparatus for each candidate:

Apparatus	Quantity	✓
Page with 4 protractors, in plastic (wallet or laminated)	1	
Beaker or container at least 8 cm high	4	
10 cm^3 syringe (note: needles are **not** required and should **not** be given to candidates)	1	
Container with tap water, labelled **For washing**	1	
Container, labelled **For waste**	1	
Paper towels	8	
White tile	1	
Ruler in mm	1	
Blunt forceps	1	
Knife or scalpel	1	
Mounted needle or seeker	1	
Stopclock, stopwatch or sight of a clock with a second hand	1	
Glass marker pen	1	
Safety goggles/glasses	1	

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. These results should be written in the Supervisor's Report (**not** on a spare Question Paper) which should be enclosed with the candidates' scripts. Please ensure that if the scripts are in several packets that a copy of the Supervisor's Report is enclosed with each packet of scripts. The Invigilator should **not** carry out **Question 1**.

Question 2

- Fresh sweet potato, methylene blue solution and iodine solution are needed for each candidate.
  More of the pieces of sweet potato should be available if requested by candidates.
- Solutions and reagents provided to the candidates should be supplied in a suitable beaker, or container, for removal of the solution using a pipette (teat).

Summary of solutions and reagents:

labelled	contents	hazard	concentration / g 100 cm^{-3}	volume / cm^3
iodine	iodine in potassium iodide solution	[H] irritant stains	as used for starch test	at least 10
methylene blue	methylene blue solution	stains	0.01	at least 10

[H] (i) **iodine**, at least 10 cm^3 iodine in potassium iodide solution (as used for starch test) in a bottle or container with a pipette (teat), labelled **iodine**.

(ii) **methylene blue**, at least 10 cm^3 methylene blue solution in a bottle or container with a pipette (teat), labelled **methylene blue**.

This is prepared by dissolving 0.1 g of methylene blue in 80 cm^3 of distilled water in a beaker or container and making up to 100 cm^3 with distilled water. This makes 0.1 g 100 cm^{-3} methylene blue solution.

Put 10 cm^3 of this 0.1 g 100 cm^{-3} methylene blue solution into a beaker or container and make up to 100 cm^3 with distilled water. This makes 0.01 g 100 cm^{-3} methylene blue solution.

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If any methylene blue comes into contact with your skin wash off immediately with water.

All solutions and reagents should be disposed of according to local safety regulations.

(iii) **sweet potato**, one piece of sweet potato, approximately 6 cm × 6 cm × 6 cm in a shallow container or Petri dish, labelled **S**.

Remove the outer skin.

Cut the sweet potato into pieces approximately 6 cm × 6 cm × 6 cm.

Put one piece of sweet potato onto a damp paper towel in a shallow container or Petri dish. Cover with damp paper towel.

Apparatus for each candidate:

Apparatus	Quantity	✓
Scalpel or sharp blade	1	
Blunt forceps	1	
Paper towel	2	
Pipette, plastic or glass, with teat	1	
Microscope slides and coverslips	2	
Glass marker pen	1	
Microscope with: • Eyepiece lens, × 10 (equal to 16 mm or $\frac{2}{3}''$) • Low-power objective lens, × 10 (equal to 16 mm or $\frac{2}{3}''$) • High-power objective lens, × 40 (equal to 4 mm or $\frac{1}{6}''$) • Eyepiece lens should have an eyepiece graticule fitted	1	

Each candidate must have sole, uninterrupted use of the microscope for 55 minutes.

During the examination, the Supervisor should, **out of the sight of the candidates**, carry out **Question 2** using the same reagent as the candidates. These results should be written in the Supervisor's Report (**not** on a spare Question Paper) which should be enclosed with the candidates' scripts. Please ensure that if the scripts are in several packets that a copy of the Supervisor's Report is enclosed with each packet of scripts. The Invigilator should **not** carry out **Question 2**.

MATERIALS TO BE SUPPLIED BY CAMBRIDGE

(i) Question Papers

note: no slide is required.

RETURN OF EXAMINATION MATERIALS TO CAMBRIDGE

There is no material to return to Cambridge.

REPORT FORM

The teacher responsible for the examination is asked to fill in the Report Form in these Confidential Instructions. For Centres where more than one script package is used, there must be a copy of the completed Report Form in each script package.

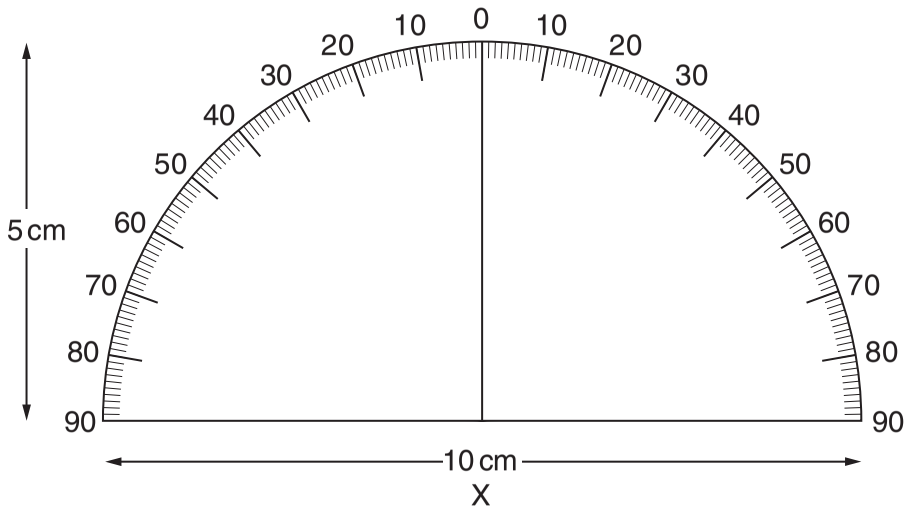
These Report Forms are vital in order to allow the examiners to assess all candidates as fairly as possible and should always be completed by every Centre.

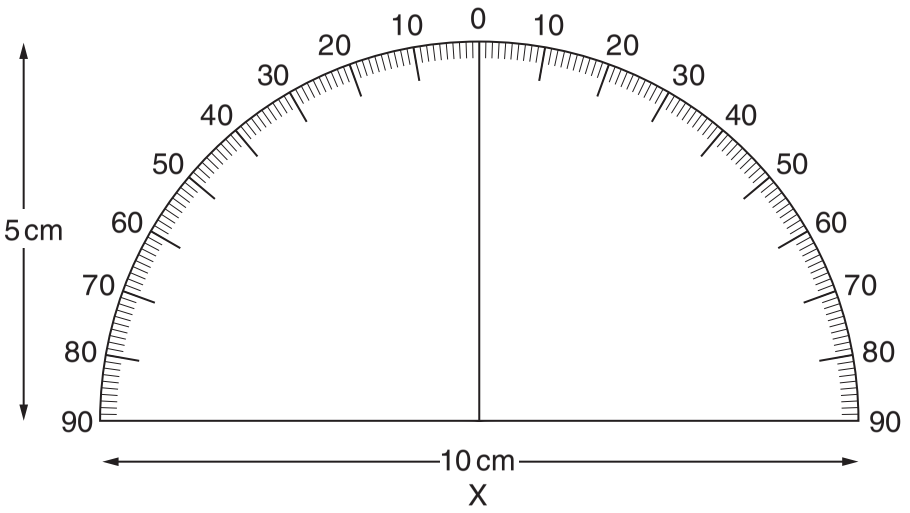
A copy of the seating plan for the examination room must also be enclosed in each script package.

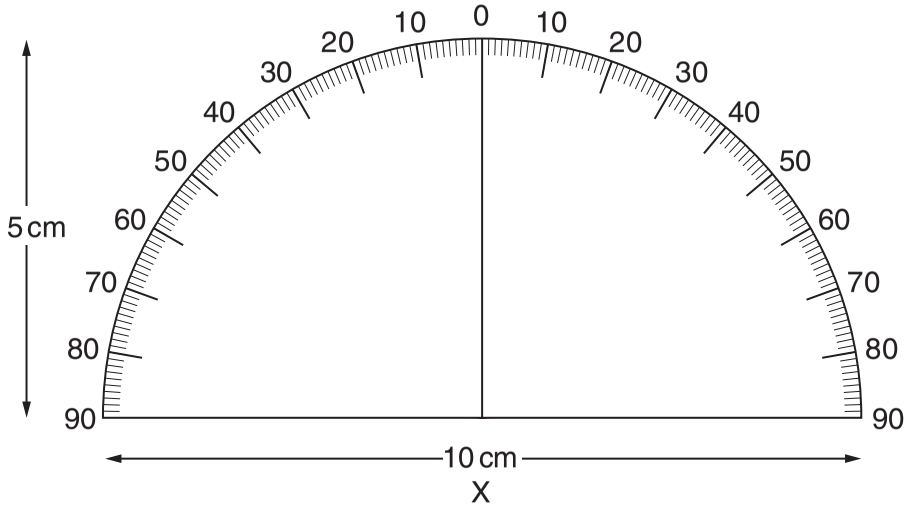
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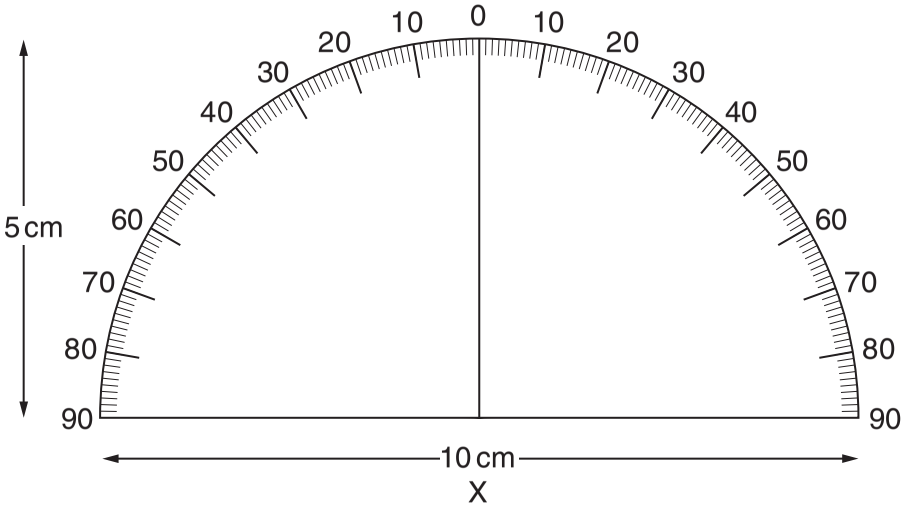
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Protractors for measuring









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

REPORT ON PRACTICAL BIOLOGY

A Level

May/June Session 2012

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 Part 6 of the Handbook for Centres.

3. During the examination, the Supervisor should, **out of sight of the candidates**, carry out **Question 1** and **Question 2**, using the same solutions and reagents as the candidates. These results 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** or **Question 2**.

Temperature of examination room ..... °C

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[Turn over

*Results for **Question 1**:*

*Results for **Question 2**:*

4. Enclose a plan of work benches with the scripts, giving details of the candidate numbers for the places occupied by the candidates for each session on a separate piece of 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 (for 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 and the appropriate seating plan(s) are sent inside **each envelope**.

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