Cambridge International AS & A Level

Cambridge International Examinations
Cambridge International Advanced Subsidiary and Advanced Level

BIOLOGY **9700/31**

Advanced Practical Skills 1 **May/June 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.

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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.

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CAMBRIDGE International Examinations

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, ×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.

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** ×10 or ×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

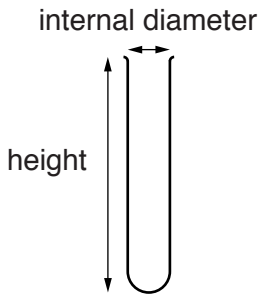
F = highly flammable substance

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 of apparatus 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.

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Confidential Instructions

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

Each candidate will require:

For both Questions

- mm ruler.

Question 1

Well before the examination, test the activity of the enzyme by mixing 3 cm^3 of **S** with 1 cm^3 of **E** in a test-tube. Leave for 5 minutes and then test a drop of this mixture for starch. The iodine should remain red-orange.
If the iodine turns blue-black contact Cambridge for advice.

- Solutions and reagents provided to the candidates should be supplied in a suitable beaker, or container, for removal of the solutions and reagents using a syringe. More of the solutions and reagents should be available if requested by candidates.
- All solutions should be provided to candidates at **room temperature**.
- Fresh test-tubes and syringes are needed for each candidate.
- Fresh **S, E, W, iodine** and **Benedict's** are needed for each candidate.
- All solutions and reagents should be disposed of according to local safety regulations.

Summary of solutions and reagents:

labelled	**contents**	**hazard**	**volume / cm^3**
S	1% starch solution	none	at least 50
E	1% bacterial amylase solution	[H] harmful [H] irritant	at least 15
W	distilled water	none	at least 100
iodine	iodine in potassium iodide solution	[H] harmful	at least 15
Benedict's	Benedict's solution	[H] harmful	at least 60

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

Preparation of solutions and reagents:

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

(i) **S**, at least 50 cm^3 of 1% starch solution, in a beaker or container, labelled **S**.

This is prepared by putting 1 g of soluble starch into 10 cm^3 of warm distilled water in a beaker or container and stirring well. Make up to 100 cm^3 with boiling distilled water, stir well and then cool to room temperature.

[H] (ii) **E**, at least 15 cm^3 of 1% bacterial amylase solution, in a beaker or container, labelled **E**.

This is prepared by putting 1 cm^3 of bacterial amylase (supplied by Cambridge) in a beaker and making up to 100 cm^3 with distilled water.

(iii) **W**, at least 100 cm^3 of distilled water in a beaker or container, labelled **W**.

[H] (iv) **Iodine**, at least 15 cm^3 of iodine in potassium iodide solution in a beaker or container, labelled **iodine**.

[H] (v) **Benedict's**, at least 60 cm^3 of Benedict's solution in a beaker or container, labelled **Benedict's**.

The containers should be labelled with the contents and the relevant hazard warnings.

The biological molecule being tested for should **not** be on the label, for example Benedict's solution for reducing sugar test should have only the word '**Benedict's**'.

The hazard warning **must** be included on the label, either as a word, e.g. "harmful", or as the pictogram/symbol.

The containers should be supplied with the means to add the reagents to test-tubes.

These reagents should be **fresh** for each candidate.

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Apparatus for each candidate should be clean.

Syringe needles are **not** required and must **not** be given to candidates.

Apparatus for each candidate	Quantity	✓
10 cm^3 syringe with the means to wash it out	2	
2 cm^3, 3 cm^3 or 5 cm^3 syringe with the means to wash it out (fresh/clean for each candidate)	1	
Pipette, plastic or glass with teat	1	
Beaker or container (capacity at least 200 cm^3), containing approximately 150 cm^3 tap water, labelled **For washing**	1	
Container (capacity at least 200 cm^3), labelled **For waste**	1	
Paper towels	8	
Beakers or containers to hold at least 50 cm^3	5	
Test-tubes – large, suitable for heating (to hold more than 40 cm^3 and less than 50 cm^3)	6	
Test-tube rack or container to hold six test-tubes	1	
Test-tube holder to handle hot test-tubes	1	
Water-bath equipment Bunsen burner, tripod, gauze, bench mat, at least 400 cm^3 clear beaker with water suitable for a water-bath (at a starting temperature between 45 °C and 50 °C), matches and a thermometer, –10 °C to 110 °C	1	
Glass rod	1	
Spotting tile or white tile	1	
Stopclock or timer showing seconds	1	
Glass marker pen	1	
Safety goggles/glasses	1	

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 **1(a)(i)**, **1(a)(ii)** and **1(b)(ii)**. These results should be written in the Supervisor's Report, **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**.

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[Turn over

Question 2

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

On receipt of the slides, please check that they are labelled **J1** and that none of the slides are broken. The material is **confidential** (so **must not** be disclosed to candidates) and the slides should **not** be viewed in advance of the examination.

The number of slides supplied by Cambridge will be equal to half the candidate entry.

Therefore, half the candidates should start on **Question 2** and the other half should start on **Question 1**.

(ii) Microscope as described on page 2

For each candidate:
- the microscope must be set up on low power
- the slide must **not** be left on the stage of the microscope.

MATERIALS TO BE SUPPLIED BY CAMBRIDGE

(i) Question papers

(ii) Bacterial amylase solution

(iii) Slide **J1**

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. The slides must **not** be included in the packet of scripts.

Or

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

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 Examiners 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

May/June 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 **Questions 1(a)(i)**, **1(a)(ii)** and **1(b)(ii)** 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 session. 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 fully 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 and the appropriate seating plan(s) are sent inside **each envelope**.

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[Turn over

Temperature of examination room .....°C

Results for **Questions 1(a)(i)**, **1(a)(ii)** and **1(b)(ii)**

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Cambridge International Advanced Subsidiary and Advanced Level

BIOLOGY **9700/32**

Advanced Practical Skills 2 **May/June 2015**

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Instructions for preparing apparatus

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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.

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** ×10 or ×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

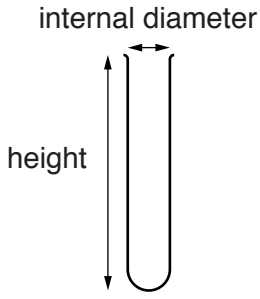
F = highly flammable substance

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 of apparatus are required, these will be specified in the Apparatus list.

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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, for removal of the solutions and reagents using a syringe. More of the solutions and reagents should be available if requested by candidates.
- All solutions should be provided to candidates at **room temperature**.
- Fresh test-tubes and syringes are needed for each candidate.
- Fresh **D1**, **D2**, **D3** and **D4**, and reagents to test for carbohydrates, are needed for each candidate.
- All solutions and reagents should be disposed of according to local safety regulations.

Summary of solutions:

labelled	contents	hazard	volume/cm^3
D1	0.5% starch solution	none	at least 20
D2	3.6% sucrose solution containing added glucose equivalent to 0.1%	none	at least 20
D3	1.0% glucose solution	none	at least 20
D4	0.1% sucrose solution	none	at least 20

Reagents to test for the carbohydrates:

- starch
- reducing sugars
- non-reducing sugars.

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 and kept in covered containers in a refrigerator. However they should be supplied to the candidates at **room temperature** for the examination.

You will need to prepare the following three stock solutions, which will then be used to make **D1**, **D2**, **D3** and **D4**:

1% starch solution

This is prepared by putting 1 g of starch (soluble) into 10 cm^3 of warm distilled water in a beaker or container, stirring well, and making up to 100 cm^3 with boiling distilled water. Stir well and then cool to room temperature.

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1% glucose solution

This is prepared by putting 1 g of glucose into 80 cm^3 of distilled water, stirring to dissolve, and making up to 100 cm^3 with distilled water.

4% sucrose solution

This is prepared by putting 8 g of sucrose into 180 cm^3 of distilled water, stirring to dissolve, and making up to 200 cm^3 with distilled water.

Use the stock solutions to make up **D1**, **D2**, **D3** and **D4** as described in **(i)** to **(iv)**:

(i) **D1**, at least 20 cm^3 of 0.5% starch solution, in a beaker or container, labelled **D1**.

This is prepared by putting 50 cm^3 of the 1.0% starch stock solution into a beaker or container, and making up to 100 cm^3 with distilled water and stirring well.

(ii) **D2**, at least 20 cm^3 of 3.6% sucrose solution containing added glucose equivalent to 0.1%, in a beaker or container, labelled **D2**.

This is prepared by putting 90 cm^3 of the 4% sucrose stock solution and 10 cm^3 of the 1% glucose stock solution into a beaker or container while stirring.

(iii) **D3**, at least 20 cm^3 of 1% glucose stock solution, in a beaker or container, labelled **D3**.

(iv) **D4**, at least 20 cm^3 of 0.1% sucrose solution, in a beaker or container, labelled **D4**.

This is prepared by putting 2.5 cm^3 of the 4% sucrose stock solution into a beaker or container, and making up to 100 cm^3 with distilled water and stirring well.

(v) **Reagents** which candidates would normally use to test for the following carbohydrates:
- starch
- reducing sugar
- non-reducing sugar – the acid provided must be labelled '**acid harmful**' and the alkali provided must be labelled '**alkali harmful**'.

The containers should be labelled with the contents and the relevant hazard warnings. The biological molecule being tested for should **not** be on the label, for example the iodine solution for starch test should have only the word '**iodine**'. The hazard warning **must** be included on the label, either as a word e.g. 'harmful' or as the pictogram/symbol.

The volumes supplied should be enough to carry out a minimum of 8 tests for each carbohydrate.
The containers should be supplied with the means to add reagents into test-tubes.

The reagents should be **fresh** for each candidate.

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Apparatus for each candidate should be clean.
Syringe needles are **not** required and must **not** be given to candidates.

Apparatus for each candidate	Quantity	✓
10 cm^3 syringe with the means to wash it out	2	
2 cm^3, 3 cm^3 or 5 cm^3 syringe with the means to wash it out	1	
Pipette, plastic or glass with teat	1	
Beaker or container, (capacity at least 400 cm^3), containing approximately 300 cm^3 tap water, labelled **For washing**	1	
Container (capacity at least 400 cm^3), labelled **For waste**	1	
Paper towels	8	
Test-tubes—large, suitable for heating (to hold more than 40 cm^3 and less than 50 cm^3)	8	
Test-tube rack to hold 8 large test-tubes **or** test-tube rack to hold 4 large test-tubes with a container to hold the other 4	1	
Test-tube holder to handle hot test-tubes	1	
Water-bath equipment for **each** candidate: Bunsen burner, tripod, gauze, bench mat, at least 400 cm^3 clear beaker with water suitable for a water-bath (at a starting temperature of between 45 °C and 50 °C), matches and a thermometer, –10 to 110 °C	1	
Stopclock or timer showing seconds	1	
White tile or spotting tile	1	
Glass marker pen	1	
Safety goggles/glasses	1	

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 **1(a)(ii)** and **1(a)(v)**. These results should be written in the Supervisor's Report, **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**.

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Question 2

(i) Slide **L1** (supplied by Cambridge)

On receipt of the slides, please check that they are labelled **L1** and that none of the slides are broken. The material is **confidential** (so **must not** be disclosed to candidates) and the slides should **not** be viewed in advance of the examination.

The number of slides supplied by Cambridge will be equal to half the candidate entry.

Therefore, half the candidates should start on **Question 2** and the other half should start on **Question 1**.

(ii) Microscope as described on page 2

For each candidate:
- the microscope must be set up on low power
- the slide must **not** be on the stage of the microscope.

MATERIALS TO BE SUPPLIED BY CAMBRIDGE

(i) Question papers

(ii) Slide **L1**

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. The microscope slides must **not** be included in the packet of scripts.

Or

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

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May/June 2015

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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 session. 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 fully the security of the examination.

Signed .....

Name (in block capitals) .....

Centre number (of enclosed scripts) .....

Centre name .....

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[Turn over

Temperature of examination room .....°C

Results for **Questions 1(a)(ii)** and **1(a)(v)**

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BIOLOGY **9700/33**

Advanced Practical Skills 1 **May/June 2015**

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[Turn over

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- 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.

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** ×10 or ×40 should be removed or replaced.

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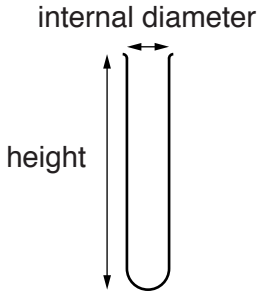
F = highly flammable substance

H = harmful or irritating substance

O = oxidising substance

T = toxic substance

N = harmful to environment



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If other dimensions of apparatus 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.

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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

The **day** before the examination, put the pieces of onion tissue into each solution **S1**, **S2** and **S3** and **W**.

- Solutions and reagents provided to the candidates should be supplied in a suitable beaker, or container, for removal of the solutions and reagents using a syringe. More of the solutions and reagents should be available if requested by candidates.
- All solutions should be provided to candidates at **room temperature**.
- Fresh test-tubes and syringes are needed for each candidate.
- Fresh **S1**, **S2**, **S3** and **W** with onion tissue are needed for each candidate.
- Fresh reagents are needed to test for carbohydrates for each candidate.
- All solutions and reagents should be disposed of according to local safety regulations.

Summary of solutions and reagents:

labelled	contents	hazard
S1	10% sodium chloride solution	none
S2	15% sucrose solution with 1 g glucose	none
S3	0.5% starch solution	none
W	distilled water	none

Reagents to test for the carbohydrates:

- starch
- reducing sugars
- non-reducing sugars.

Summary of materials:

material	details	quantity
onion tissue	pieces of onion tissue should be pre-soaked the day before the examination in each of **S1**, **S2**, **S3** and **W**	1 in each of **S1**, **S2**, **S3** and **W** (more should be available if requested by candidates). Each piece must be covered by liquid

note: the volume of **S1**, **S2**, **S3** and **W** needs to be enough to cover the pieces of onion tissue in the container.

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

Preparation of solutions and reagents:

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

(i) **S1**, 10% sodium chloride solution to cover one piece of onion, in a beaker or container, labelled **S1**.

This is prepared by dissolving 10 g of sodium chloride in 80 cm^3 of distilled water and making up to 100 cm^3 with distilled water.

(ii) **S2**, 15% sucrose and glucose solution to cover one piece of onion, in a beaker or container labelled **S2**.

This is prepared by dissolving 15 g of sucrose in 80 cm^3 of distilled water and making up to 100 cm^3 with distilled water. Stir well to dissolve the sucrose then sprinkle 1 g of glucose into the 15% sucrose solution and stir well to dissolve the glucose.

You will need to prepare the following stock solution which will then be used to make **S3**:

1% starch solution

This is prepared by putting 1 g of starch (soluble) into 25 cm^3 of warm distilled water in a beaker or container and mixing to a paste. Make up to 100 cm^3 with boiling distilled water, mix well and then allow to cool.

(iii) **S3**, 0.5% starch solution to cover one piece of onion, in a beaker or container, labelled **S3**.

This is prepared by taking 50 cm^3 of the 1% stock solution and making it up to 100 cm^3 with distilled water.

(iv) **W**, distilled water to cover one piece of onion in a beaker or container, labelled **W**.

(v) **Reagents** which candidates would normally use to test for the following carbohydrates:

- starch
- reducing sugar
- non-reducing sugar – the acid provided must be labelled '**acid harmful**' and the alkali provided must be labelled '**alkali harmful**'.

The containers should be labelled with the contents and the relevant hazard warnings. The biological molecule being tested should **not** be on the label, for example the iodine solution for starch test should have only the word '**iodine**'. The hazard warning **must** be included on the label, either as the word e.g. "harmful" or as the pictogram/symbol.

The volumes supplied should be enough to carry out a minimum of 6 tests for each molecule. The containers should be supplied with the means to add reagents into the test-tubes.

These reagents should be **fresh** for each candidate.

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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 must be as fresh as possible to avoid the effects of storage.
- The pieces of onion must be prepared the day before and left in **S1**, **S2**, **S3** and **W** with the containers covered to prevent evaporation.

1. Cut off the top and bottom of the onion.

2. Remove the outer dry scales.

3. Cut the onion into pieces as in Fig. 1.1.

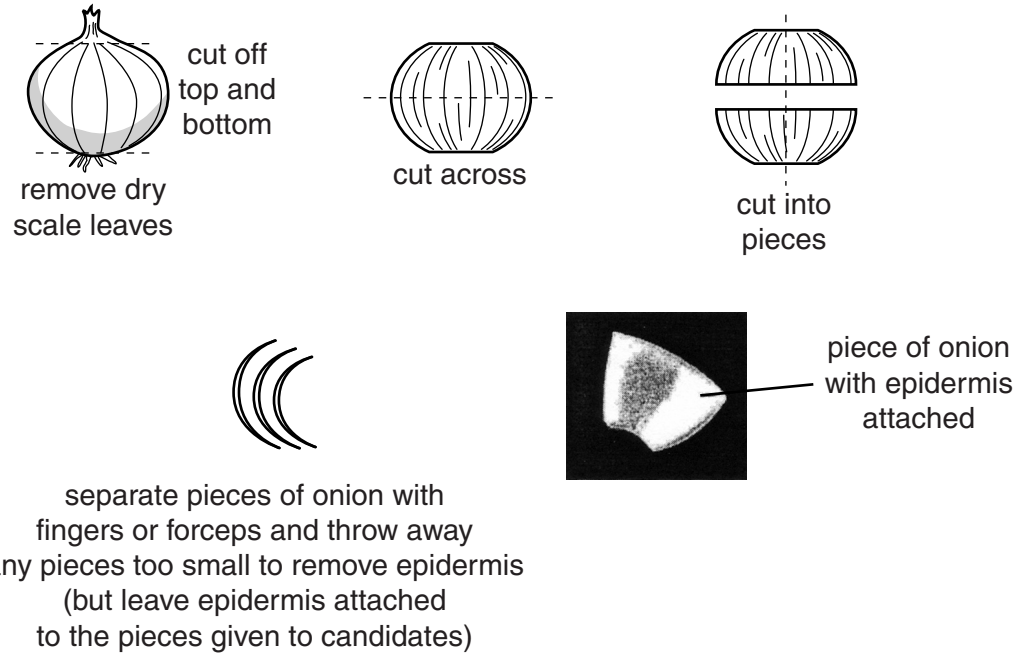


Fig. 1.1

4. Place the number of pieces of onion required for all the candidates with some spares into large containers with enough of each liquid (**S1** or **S2** or **S3** or **W**) to submerge the onion pieces. Cover the containers and keep in a refrigerator or cool place.

Before the examination, ensure that solutions containing the piece of onion for each candidate are at room temperature.

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Apparatus for each candidate should be clean.
Syringe needles are **not** required and must **not** be given to candidates.

Apparatus for each candidate	Quantity	✓
2 cm^3, 3 cm^3 or 5 cm^3 syringe with the means to wash it out	2	
Pipette, plastic or glass with teat	1	
Beaker or container (capacity at least 400 cm^3), containing approximately 300 cm^3 tap water for pouring into test-tubes, labelled **For washing**	2	
Container (capacity at least 400 cm^3), labelled **For waste**	2	
Paper towels	8	
Test-tube, suitable for heating, to hold a volume more than 15 cm^3 and less than 20 cm^3	3	
Test-tube rack or container to hold three test-tubes	1	
Test-tube holder to handle hot test-tubes	1	
Water-bath equipment for **each** candidate Bunsen burner, tripod, gauze, bench mat, at least a 250 cm^3 clear beaker with water suitable for a water-bath (at a starting temperature between 45°C and 50°C), matches and a thermometer, –10°C to 110°C	1	
Forceps (blunt)	1	
Glass rod	1	
Scalpel or sharp blade	1	
Seeker or mounted needle	1	
Spotting tile or white tile	1	
Stopclock or timer showing seconds	1	
Glass marker pen	1	
Safety goggles/glasses	1	
Microscope slides and coverslips	4	
Microscope as described on page 2 For each candidate: • the microscope must be set up on low power • no slides must be on the stage of the microscope.	1	

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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 **1(a)(iii)** and **1(b)(ii)**. These results should be written in the Supervisor's Report, **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.

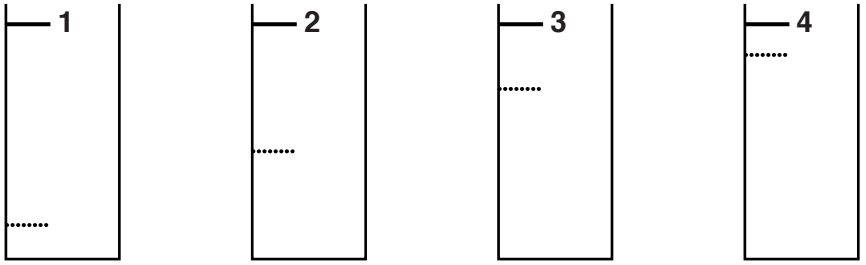
The Invigilator should **not** carry out **Question 1**.

Question 2

Apparatus for each candidate should be clean.
Syringe needles are **not** required and must **not** be given to candidates.

Apparatus for each candidate	Quantity	✓
5 cm^3 or 10 cm^3 syringe with the means to wash it out	1	
Beaker or container (capacity about 400 cm^3), containing about 300 cm^3 tap water for pouring into the specimen tubes	1	
Container(s), to hold about 400 cm^3, labelled **For waste**	1	
Paper towels	8	
Specimen tubes, clear, no more than 50 cm^3, labelled **1 or 2 or 3 or 4** (see Fig. 2.1)	4	

Preparation of specimen tubes:
For each candidate, set up the specimen tubes by adding short marker lines as shown in Fig. 2.1.



Key:
—— line approximately 5 mm from top of tube
····· additional line

Fig. 2.1

1. Each tube must have a short line approximately 5 mm from the top of the tube.
2. Each tube has one additional line so that each line is at a different height on the tube in the pattern as shown.
3. The actual heights of the additional lines are not critical as long as the pattern is maintained as shown in Fig. 2.1
4. Label the tubes, **1**, **2**, **3** or **4** as shown.

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During the examination, the Supervisor (**not** the Invigilator) should, **out of the sight of the candidates**, carry out **Question 2** using the same apparatus as the candidates, in order to obtain results for **2(a)(ii)**. These results should be written in the Supervisor's Report, **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 that 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 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.

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 Examiners 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

May/June 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 and Question 2** using the same solutions and reagents as the candidates. The results for **Questions 1(a)(iii)**, **1(b)(ii)** and **2(a)(ii)** 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 and Question 2**.

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 session. 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 and the appropriate seating plan(s) are sent inside **each envelope**.

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Temperature of examination room .....°C

Results for **Questions 1(a)(iii) and 1(b)(ii)**

Results for **Question 2(a)(ii)**

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Cambridge International AS & A Level

Cambridge International Examinations
Cambridge International Advanced Subsidiary and Advanced Level

BIOLOGY **9700/34**

Advanced Practical Skills 2 **May/June 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.

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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 **9** printed pages and **3** blank pages.

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CAMBRIDGE International Examinations

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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.**

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.

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** ×10 or ×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

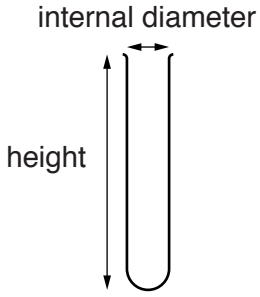
F = highly flammable substance

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 of apparatus 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.

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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

Before the examination, prepare the plant extract and test its activity using the instructions below.

- Solutions and reagents provided to the candidates should be supplied in a suitable beaker, or container, for removal of the solutions and reagents using a syringe. More of the solutions and reagents should be available if requested by candidates.
- All solutions should be provided to candidates at **room temperature**.
- Fresh test-tubes and syringes are needed for each candidate.
- Fresh **P**, **X**, **H** and **W** are needed for each candidate.
- All solutions and reagents should be disposed of according to local safety regulations.

Well before the examination prepare the plant extract and test its activity as below. The active mung bean plant extract can be frozen in advance, then defrosted to reach room temperature before the examination.

Put approximately 40 g of dried mung beans into a beaker or container and make up to 500 cm^3 with distilled water. Cover the container and leave to soak for at least **12 hours**.

Liquidise all the soaked mung beans with all the liquid until ground into small pieces, or grind in a pestle and mortar.

Allow the larger solid pieces to settle and decant off the cloudy solution. Do **not** filter. The solution will contain small pieces of plant material and should be cloudy.

Test for activity of P:

The activity of the plant extract solution should be tested before the examination by putting 10 cm^3 of **H** into a test-tube. Stir the plant extract solution **P** and add 10 cm^3 of **P** to the test-tube containing **H**. The mixture should produce rapid bubbles and foam within 2 minutes.

If the reaction is too fast decrease the concentration of **H**. It is not necessary to tell the candidates of any change in the concentration of **H**.

If the reaction is too slow then soak a larger mass of mung beans in the same volume of water or change the source of the mung beans.

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Summary of solutions and reagents:

labelled	contents	hazard	volume / cm^3
P	plant extract solution	none	at least 90
X	0.3% copper sulfate solution	[H] harmful	at least 20
H	6% hydrogen peroxide solution	[H] harmful [H] irritant	at least 90
W	distilled water	none	at least 100

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

Preparation of solutions and reagents:

(i) **P**, at least 90 cm^3 of plant extract solution in a beaker or container, labelled, **P**.

You will need to prepare the following stock solution which will then be used to make **X**:

3% copper sulfate solution

This is prepared by putting 3 g of copper sulfate pentahydrate ($CuSO_4.5H_2O$) in 80 cm^3 distilled water, stirring to dissolve and making up to 100 cm^3 with distilled water. This makes a pale blue solution.

[H] (ii) **X**, at least 20 cm^3 of 0.3% copper sulfate solution in a beaker or container, labelled **X**.

The 0.3% copper sulfate solution for candidates is prepared by putting 10 cm^3 of the 3% stock solution in a beaker or container and making up to 100 cm^3 with distilled water. This makes a very pale blue solution.

[H] (iii) **H**, at least 90 cm^3 of 6% (20 vols) hydrogen peroxide solution, in a beaker or container, labelled **H**.

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

(iv) **W**, at least 100 cm^3 of distilled water in a beaker or container, labelled **W**.

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Apparatus for each candidate should be clean.

Syringe needles are **not** required and must **not** be given to candidates.

Apparatus for each candidate	Quantity	✓
10 cm^3 syringe with the means to wash it out	2	
10 cm^3 syringe, labelled **X**	1	
5 cm^3 syringe (without the plunger) The nozzle needs to be sealed by sucking up a very small quantity of melted wax (e.g. candle). Put the plunger in to the 5 cm^3 mark and suck up less than 0.2 cm^3. Leave the plunger in until the wax has cooled. Remove the plunger.	1	
Beaker or container (capacity at least 300 cm^3), containing approximately 200 cm^3 tap water for pouring into test-tubes, labelled **For washing**	1	
Container (capacity at least 300 cm^3), labelled **For waste**	1	
Paper towels	8	
Beakers or containers to hold at least 50 cm^3 to allow a 10 cm^3 syringe to remove liquid	6	
Beaker or container (capacity at least 400 cm^3) filled to two-thirds full with tap water, labelled **T**	1	
Test-tubes – to hold more than 40 cm^3 but no more than 50 cm^3 and to fit the bung being provided to each candidate	6	
Bung with a plastic or rubber delivery tube connected as described in Fig. 1.1 to fit **each** of the test-tubes to give an airtight seal	1	
Test-tube rack to hold 6 test-tubes **or** a test-tube rack to hold 1 test-tube with a container to hold the other 5 test-tubes	1	
Glass rod	1	
Stopclock or timer showing seconds	1	
Glass marker pen	1	
Safety goggles/glasses	1	
Petroleum jelly available on request for a candidate to make the apparatus air tight as needed	–	

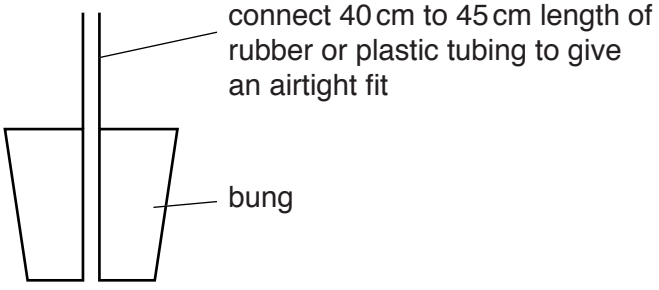


Fig. 1.1

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 **1(b)(ii)** and **1(b)(iii)**. These results should be written in the Supervisor's Report, **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

(i) Slide **M1** (supplied by Cambridge)

On receipt of the slides, please check that they are labelled **M1** and that none of the slides are broken. The material is **confidential** (so **must not** be disclosed to candidates) and the slides should **not** be viewed in advance of the examination.

The number of slides supplied by Cambridge will be equal to half the candidate entry.

Therefore, half the candidates should start on **Question 2** and the other half should start on **Question 1**.

(ii) Microscope as described on page 2

For each candidate:

- the microscope must be set up on low power
- the slide must **not** be on the stage of the microscope.

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MATERIALS TO BE SUPPLIED BY CAMBRIDGE

(i) Question papers

(ii) Slide **M1**

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. The slides must **not** be included in the packet of scripts.

Or

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

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.

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

SUPERVISOR'S REPORT

May/June 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 **Questions 1(b)(ii)** and **1(b)(iii)** 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 session. 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 and the appropriate seating plan(s) are sent inside **each envelope**.

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[Turn over

Temperature of examination room .....°C

Results for **Questions 1(b)(ii) and 1(b)(iii)**

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Cambridge International AS & A Level

Cambridge International Examinations
Cambridge International Advanced Subsidiary and Advanced Level

BIOLOGY **9700/35**

Advanced Practical Skills 1 **May/June 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.

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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.

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UNIVERSITY of CAMBRIDGE
International Examinations

[Turn over

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, ×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.

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** ×10 or ×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

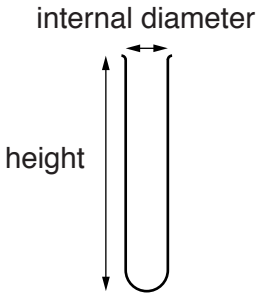
F = highly flammable substance

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 of apparatus 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.

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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, for removal of the solutions and reagents using a syringe. More of the solutions and reagents should be available if requested by candidates.
- All solutions should be provided to candidates at **room temperature**.
- Clean, dry test-tubes and syringes are needed for each candidate.
- Fresh **U**, **W**, **E** and **R** are needed for each candidate.
- All solutions and reagents should be disposed of according to local safety regulations.

Before the examination, test the activity of the enzyme, **E**, by mixing 2 cm^3 of **U** with 2 cm^3 of **E** in a test-tube. Add a small piece of red litmus paper to the mixture and time how long it takes for the paper to change to blue. If this is longer than 5 minutes then increase the concentration of **U** to 10 g in 100 cm^3 of distilled water. If the 10% solution of **U** is used candidates should **not** be informed of the change.

Summary of solutions and reagents:

labelled	contents	hazard	volume /cm^3
U	5% urea solution	[H] harmful [H] irritant	at least 50
W	distilled water	none	at least 100
E	urease solution	[H] harmful [H] irritant	at least 10

labelled	contents	hazard	quantity
R	red litmus paper	–	two strips each of length 5 cm

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

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Preparation of solutions and reagents:

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

[H] (i) **U**, at least 50 cm^3 of 5% urea solution, in a beaker or container, labelled **U**.

This is prepared by putting 5 g of urea (supplied by Cambridge) into 80 cm^3 of distilled water in a beaker or container while stirring. Make up to 100 cm^3 with distilled water.

(ii) **W**, at least 100 cm^3 of distilled water in a beaker or container, labelled **W**.

[H] (iii) **E**, at least 10 cm^3 of urease solution, in a beaker or container, labelled **E**.

This is prepared by putting 3 crushed tablets of urease (supplied by Cambridge) into 80 cm^3 of distilled water in a beaker or container while stirring. Make up to 100 cm^3 with distilled water. The solution may remain cloudy.

(iv) **R**, two strips of red litmus paper, each approximately 5 cm in length, in a small dry container, labelled **R**.

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Apparatus for each candidate should be clean.

Syringe needles are **not** required and must **not** be given to candidates.

Apparatus for each candidate	Quantity	✓
10 cm^3 syringe with the means to wash it out	2	
2 cm^3 or 3 cm^3 syringe with the means to wash it out	1	
Beaker or container (capacity at least 200 cm^3), containing approximately 150 cm^3 tap water, labelled **For washing**	1	
Container (capacity at least 200 cm^3), labelled **For waste**	1	
Beaker or container (capacity at least 50 cm^3)	4	
Paper towels	8	
Test-tubes (to hold more than 15 cm^3 and less than 20 cm^3)	8	
Test-tube rack to hold 8 test-tubes **or** a test-tube rack to hold 4 test-tubes with a container to hold the other 4 test-tubes	1	
Blunt forceps	1	
Glass rod	1	
Scissors	1	
Stopclock or timer showing seconds	1	
Glass marker pen	1	
Safety goggles/glasses	1	

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 **1(b)(ii)**. These results should be written in the Supervisor's Report, **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, that 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**.

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Question 2

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

On receipt of the slides, please check that they are labelled **K1** and that none of the slides are broken. The material is **confidential** (so **must not** be disclosed to candidates) and the slides should **not** be viewed in advance of the examination.

The number of slides supplied by Cambridge will be equal to half the candidate entry.

Therefore, half the candidates should start on **Question 2** and the other half should start on **Question 1**.

(ii) Microscope as described on page 2

For each candidate:

- the microscope must be set up on low power
- the slide must **not** be on the stage of the microscope.

MATERIALS TO BE SUPPLIED BY CAMBRIDGE

(i) Question papers

(ii) Urea powder

(iii) Urease tablets

(iv) 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 packet of scripts.

Or

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

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 Examiners 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

May/June 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 sight of the candidates**, carry out **Question 1** using the same solutions and reagents as the candidates. The results for **Question 1(b)(ii)** 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 session. 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 and the appropriate seating plan(s) are sent inside **each envelope**.

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[Turn over

Temperature of examination room .....°C

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

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