Cambridge International AS & A Level

Cambridge International Examinations
Cambridge International Advanced Subsidiary and Advanced Level

BIOLOGY **9700/31**

Advanced Practical Skills 1 **May/June 2014**

CONFIDENTIAL INSTRUCTIONS

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

If you have any problems or queries regarding these Instructions, please contact CIE
by e-mail: info@cie.org.uk
by phone: +44 1223 553554
by fax: +44 1223 553558
stating the Centre number, the nature of the query and the syllabus number quoted above.

This document consists of **8** printed pages.

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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 sole, uninterrupted, use of the microscope for at least 55 minutes.

Supervisors are advised to remind candidates that **all** substances in the examination should be treated with caution. Pipette fillers and safety goggles should be used where necessary.

In accordance with 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

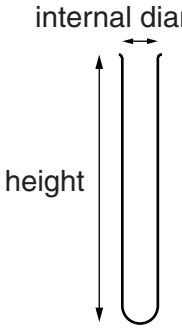
F = highly flammable substance

H = harmful or irritating substance

O = oxidising substance

T = toxic substance

N = harmful to environment



It is expected that the test-tubes provided are approximately 150 mm in height.

Other dimensions will be specified if needed 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

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 solution using a syringe. More of the solutions and reagents should be available if requested by candidates.
- Clean test-tubes and syringes are needed for each candidate.
- Fresh **G**, **S1**, **S2**, **W** and **Benedict's solution** 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	percentage concentration	volume /cm^3
G	glucose solution	none	4	at least 60
S1	glucose solution	none	3	at least 15
S2	glucose solution	none	1.5	at least 15
W	distilled water	none	–	at least 100
Benedict's solution	Benedict's solution	[H] harmful irritant	–	at least 80

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

Preparation of solutions and reagents:

(i) **G**, at least 60 cm^3 of 4% glucose solution, in a beaker or container, labelled **G**.

This is prepared by sprinkling 4 g of glucose, a little at a time, onto the surface of 50 cm^3 of distilled water, stirring continuously, and making up to 100 cm^3 with distilled water.

This is sufficient for 1 candidate.

(ii) **S1**, at least 15 cm^3 of 3% glucose solution, in a beaker or container, labelled **S1**.

This is prepared by sprinkling 3 g of glucose, a little at a time, onto the surface of 50 cm^3 of distilled water, stirring continuously, and making up to 100 cm^3 with distilled water.

This is sufficient for 6 candidates.

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(iii) **S2**, at least 15 cm^3 of 1.5% glucose solution, in a beaker or container, labelled **S2**.

This is prepared by sprinkling 1.5 g of glucose, a little at a time, onto the surface of 50 cm^3 of distilled water, stirring continuously, and making up to 100 cm^3 with distilled water.

This is sufficient for 6 candidates.

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

This is sufficient for 1 candidate.

[H] (v) **Benedict's solution**, at least 80 cm^3 of Benedict's solution, in a small beaker or container (so that a syringe can be used), labelled **Benedict's**.

This should be qualitative Benedict's solution as provided by your supplier or made up by the technician. Please note it is important to use hydrated copper sulfate crystals ($CuSO_4.5H_2O$) when making up the Benedict's solution.

This is sufficient for 1 candidate.

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Apparatus for each group of candidates 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 or 5 cm^3 syringe with the means to wash them out	2	
Beaker or container (approximately 400 cm^3), with tap water for pouring into test-tubes, labelled **For washing**	1	
Beaker or container (minimum 400 cm^3), labelled **For waste**	1	
Paper towels	8	
Beakers or containers to hold 30 cm^3 volume	5	
Test-tubes	6	
Test-tube rack(s) or container(s) to hold six test-tubes	1	
Test-tube holder to hold hot test-tubes	1	
Water-bath equipment: Bunsen burner, tripod, gauze, bench mat, at least a 400 cm^3 **clear** beaker with water, between 45 °C–50 °C, suitable for a water-bath, matches and a thermometer –10 °C to 110 °C	1	
Stop-clock 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. The results for **1(a)(vii)** should be written in the Supervisor's Report (on pages 7 and 8), not on a spare question paper.
The Supervisor's Report and the candidates' seating plan should be enclosed with the candidates' scripts.
Please ensure that, if the scripts are in several packets a copy of the Supervisor's Report and the candidates' seating plan are enclosed with each packet of scripts.
The Invigilator should **not** carry out **Question 1**.

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Question 2

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

For each candidate:

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

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

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

(ii) Microscope with:

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

MATERIALS TO BE SUPPLIED BY CAMBRIDGE

(i) Question papers.

(ii) 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. These 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 ON PRACTICAL BIOLOGY A LEVEL

May/June 2014

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 **1(a)(vii)** 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 for ***Question 1(a)(vii)***

Temperature of examination room ..... °C

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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BIOLOGY **9700/32**

Advanced Practical Skills 2 **May/June 2014**

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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 sole, uninterrupted, use of the microscope for at least 55 minutes.

Supervisors are advised to remind candidates that **all** substances in the examination should be treated with caution. Pipette fillers and safety goggles should be used where necessary.

In accordance with 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

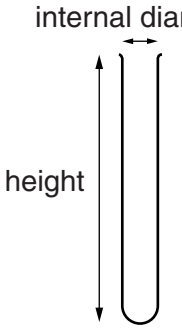
F = highly flammable substance

H = harmful or irritating substance

O = oxidising substance

T = toxic substance

N = harmful to environment



It is expected that the test-tubes provided are approximately 150 mm in height.

Other dimensions will be specified if needed 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

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 solution using a syringe. More of the solutions should be available if requested by candidates.
- Clean test-tubes and syringes are needed for each candidate.
- Fresh **C**, **W**, **M**, and **E** and are needed for each candidate.
- All solutions and milk should be disposed of according to local safety regulations.

Summary of solutions:

labelled	contents	hazard	volume /cm^3
C	10% calcium chloride solution	[H] irritant	at least 50
W	distilled water	none	at least 100
M	milk	none	at least 100
E	1% rennet solution	[H] irritant	at least 20

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

Preparation of solutions:

[H] (i) **C**, at least 50 cm^3 of 10% calcium chloride solution, in a beaker or container, labelled **C**.

This is prepared by putting 10 g of calcium chloride-6-water into 70 cm^3 of distilled water and mixing continuously. Make up to 100 cm^3 with distilled water.

This is sufficient for 2 candidates.
The candidates will be told that this 10% solution is, for the purpose of their investigation, 20% calcium chloride.

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

This is sufficient for 1 candidate.

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(iii) **M**, 100 cm^3 of fresh full fat milk, in a beaker or container, labelled **M**.
Or
Dried milk solution, in a beaker or container, labelled **M**.

The dried milk solution is prepared by putting 10 g of dried milk powder in 80 cm^3 distilled water, mixing continuously. Make up to 100 cm^3 with distilled water.

This is sufficient for 1 candidate.

[H] (iv) **E**, at least 20 cm^3 of 1% rennet solution, in a beaker or container, labelled **E**.

This is prepared by putting 1 cm^3 of rennet solution (supplied by Cambridge) into 80 cm^3 of distilled water and stirring continuously. Make up to 100 cm^3 with distilled water.

This is sufficient for 5 candidates.

C, **M** and **E** can be made up the day before the examination and stored in a refrigerator. However, these must be at room temperature for the examination.

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Apparatus for each group of candidates should be clean.

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

Apparatus for each candidate	Quantity	✓
10 cm^3 syringe	3	
2 cm^3 or 3 cm^3 or 5 cm^3 syringe	1	
Container with tap water, labelled **For washing**	1	
Container, labelled **For waste**	1	
Paper towels	8	
Beakers or containers to hold 30 cm^3 volume	5	
Test-tubes, large not less than 25 cm^3 volume Each candidate must have **either** 8 medium **or** 8 large test-tubes	8	
Test-tube rack or container to hold 4 large test-tubes at one time	1	
Thermometer –10 °C to 110 °C	1	
Container with hot water between 50 °C to 60 °C labelled **Hot water** The Supervisor may use a thermostatically-controlled water-bath to provide additional hot water if requested by candidates.	1	
Container with cold water below 30 °C labelled **Cold water**	1	
400 cm^3 beaker or container, labelled **Water-bath**, to act as a water-bath to contain four large test-tubes at a time.	1	
Black card or paper approximately 100 mm × 100 mm	1	
Stop-clock 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. The results for **1(a)(ii)** should be written in the Supervisor's Report (on pages 7 and 8), not on a spare question paper.
The Supervisor's Report and the candidates' seating plan should be enclosed with the candidates' scripts.
Please ensure that, if the scripts are in several packets a copy of the Supervisor's Report and the candidates' seating plan are enclosed with each packet of scripts.
The Invigilator should **not** carry out **Question 1**.

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Question 2

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

For each candidate:

- the microscope must be set up on low power
- the slide must **not** be on the stage of the microscope.
- Each candidate must have sole, uninterrupted use of the microscope for 55 minutes.

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

(ii) Microscope with:

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

MATERIALS TO BE SUPPLIED BY CAMBRIDGE

(i) Question papers.

(ii) Rennet – refrigerate on receipt.

(iii) 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. These 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 2014

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

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(b) accidents to apparatus or materials;

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

Temperature of examination room ..... °C

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) .....

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BIOLOGY **9700/33**

Advanced Practical Skills 1 **May/June 2014**

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- 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.

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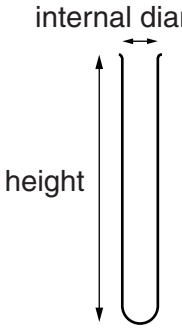
F = highly flammable substance

H = harmful or irritating substance

O = oxidising substance

T = toxic substance

N = harmful to environment



It is expected that the test-tubes provided are approximately 150 mm in height.

Other dimensions will be specified if needed 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

Each candidate will require:

For both questions

- mm ruler.
- 7.0% yeast cell suspension (see below).

Question 1

- Solutions and reagents provided to the candidates should be supplied in a suitable beaker, or container, for removal of the solution using a syringe. More of the solutions and reagents should be available if requested by candidates.
- Clean test-tubes and syringes are needed for each candidate.
- Fresh **Y**, **C** and **H** 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
Y	7.0% yeast cell suspension	none	at least 50
C	0.01 mol dm^{-3} calcium hydroxide coloured blue with bromothymol blue indicator	[H] irritant	at least 70
H	0.05 mol dm^{-3} hydrochloric acid	[H] irritant	at least 30

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

Preparation of solutions and reagents:

(i) **Y**, at least 50 cm^3 of a 7.0% yeast cell suspension with glucose added **10** to **15** minutes before the candidates start Question 1 (also the starting yeast cell suspension for Question 2).
As the yeast cell suspension will froth, it should be prepared in a large container.

7.0 g of dried yeast (**for baking**) is added to 80 cm^3 of warm distilled water, stirred and made up to 100 cm^3 with warm distilled water. This should be kept at a temperature between 35 °C and 40 °C.

This is sufficient for 2 candidates.

10 to **15** minutes before the candidates start Question 1 add the glucose.
Sprinkle 20 g of glucose, a little at a time, onto the surface of the yeast cell suspension, stirring continuously. Keep warm between 35 °C and 40 °C until needed.
When ready to put into beakers for each candidate, it is suggested that the yeast cell suspension is decanted into a new beaker or container leaving the froth behind.

50 cm^3 of the yeast cell suspension should be given to each candidate in a beaker or container, labelled **Y**. The beaker or container needs to be large enough to hold at least 250 cm^3 since the yeast will froth.

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It is **essential** to try the yeast well **before** the examination to make sure that it will become active. (Do **not** use Brewer's yeast as this does not always work actively enough in the time).

To test the activity of the yeast cell suspension, set up the apparatus as in Fig. 1.1.

C should remain blue after three minutes. If the blue colour is removed then dilute the yeast cell suspension and repeat.

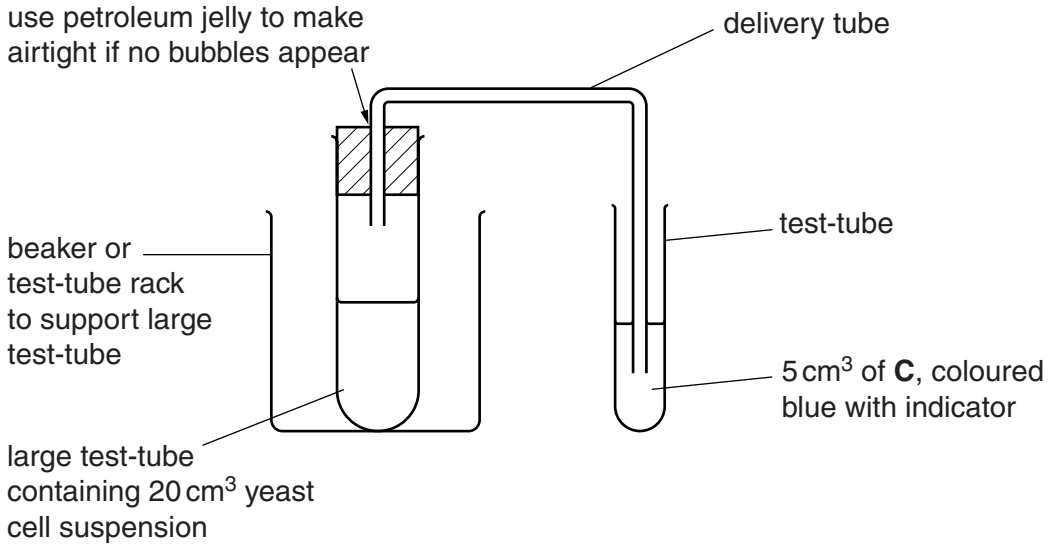


Fig. 1.1

[H] (ii) **C**, at least 70 cm^3 of 0.01 mol dm^{-3} calcium hydroxide, in a beaker or container, labelled **C**.

This should be coloured blue by putting approximately 5 cm^3 of bromothymol blue indicator into the 70 cm^3 of **C**.

C is prepared by dissolving 0.74 g of calcium hydroxide in 500 cm^3 of distilled water, mixing well then making up to 1000 cm^3 with distilled water. This makes a solution which may remain cloudy. (If you do not have a balance which measures to 0.01 g then 0.7 g of calcium hydroxide is acceptable.)

This is sufficient for 14 candidates.

To prepare bromothymol blue indicator:

- Put 0.1 g of bromothymol blue into a beaker or container.
- Put 16 cm^3 of 0.01 mol dm^{-3} sodium hydroxide solution into the same beaker and mix well to dissolve the bromothymol blue.
- Make up to 250 cm^3 with distilled water.

To prepare 0.01 mol dm^{-3} sodium hydroxide solution:

- Using forceps, put 4 g of sodium hydroxide into a beaker or container with 80 cm^3 of distilled water.
- Mix well to dissolve.
- Make up to 100 cm^3 with distilled water. This is the stock solution of 1 mol dm^{-3} sodium hydroxide solution.
- Put 1 cm^3 of this stock solution into a beaker or container and make up to 100 cm^3 with distilled water.

[H] (iii) **H**, at least 30 cm^3 of 0.05 mol dm^{-3} hydrochloric acid in a beaker or container, labelled **H**.

This is sufficient for 1 candidate.

(Safety: Acid **must** be added to water. Water must **not** be added **to** acid.)

To dilute 1.00 mol dm^{-3} hydrochloric acid, add 5 cm^3 of the acid to 95 cm^3 of distilled water in a beaker or container.

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Apparatus for each group of candidates 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	2	
Glass rod	1	
Beaker or container (approximately 400 cm^3) with tap water, labelled **For washing**	1	
Beaker or container, labelled **For waste**	1	
Paper towels	8	
Test-tubes – to hold approximately 25 cm^3	6	
Test-tubes – with an internal diameter between approximately 22 mm and 24 mm and to hold more than 40 cm^3 and less than 50 cm^3	1	
Bung (to give an airtight fit with the larger test-tube) with delivery tube to go into the smaller test-tubes as shown in Fig. 1.1	1	
Test-tube rack(s) or container(s) to hold six small test-tubes and one large test-tube	1	
Petroleum jelly to be available on request		
Stop-clock 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. The results for **1(a)(iv)** should be written in the Supervisor's Report (on pages 11 and 12), 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

- Yeast cell suspensions provided to the candidates should be supplied in a container, suitable for the removal of a drop of suspension using a glass rod or teat pipette.

Prepare a 7.0% yeast cell suspension as described for Question 1. **The glucose should be added to the yeast 10 to 15 minutes before the candidates start Question 2. Each candidate should have fresh yeast cell suspension.**

Put 50 cm^3 of 7.0% yeast suspension into a beaker or container and make up to 100 cm^3 with warm distilled water. The yeast needs to be actively frothing.

This makes the 3.5% yeast suspension needed for the samples **S2** and **S3**.

S1 could be prepared the day before and stored in a refrigerator.

Summary of solutions and reagents:

labelled	contents	hazard	volume /cm^3
S1	3.5% **boiled** yeast cell suspension	none	at least 5
S2	3.5% active yeast cell suspension	none	at least 5
S3	mixture of **S1** and **S2**	none	at least 5
M	1% methylene blue solution	[H] harmful	at least 5

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

Each candidate will require:

(i) **S1**, at least 5 cm^3 of 3.5% **boiled** yeast cell suspension in a small container, labelled **S1**. **For example**: put 20 cm^3 of 3.5% yeast cell suspension into a container and put this into a boiling water-bath for 10 minutes.
To check that **all** the yeast cells are dead:

- place a drop of suspension onto a microscope slide
- add 1 drop of methylene blue as made up below
- mix with a glass rod and leave for 5 minutes
- add a coverslip and observe using the high-power objective lens of the microscope. Nearly all the cells should be blue. If this is not the case then boil for an extra 5 minutes. Repeat if necessary.

S1 could be prepared the day before and stored in a refrigerator.

This is sufficient for 4 candidates.

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(ii) **S2**, at least 5 cm^3 of 3.5% yeast cell suspension (active) as diluted above from active 7.0% yeast suspension.

(iii) **S3**, at least 5 cm^3 of 3.5% yeast cell suspension made up of equal volumes of **S1** and **S2**.
For example, put 10 cm^3 of **S1** into a small container. Add 10 cm^3 of **S2** to the small container and mix well.

This is sufficient for 4 candidates.

[H] (iv) **M**, at least 5 cm^3 of freshly prepared 1% methylene blue solution in a container with a pipette, labelled **M**.

This is prepared by dissolving 1.0 g of methylene blue and 0.6 g of sodium chloride in 80 cm^3 of distilled water and making it up to 100 cm^3 with distilled water.

This is sufficient for 20 candidates.
(Safety: Be careful not to inhale the powder. If methylene blue comes into contact with your skin, rinse with cold water.)

Apparatus for each group of candidates should be clean.

Apparatus for each candidate	Quantity	✓
Microscope slides and coverslips	3	
Pipette, teat to remove samples from containers	2	
Glass rod	1	
Mounted needle or seeker	1	
Beaker or container, (about 200 cm^3) with tap water, labelled **for washing**	1	
Beakers or container, labelled **for waste**	1	
Glass marker pen	1	
Paper towel	6	
Stop-clock or stopwatch or sight of a clock to time five minutes	1	
Microscope with: • 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, ×10 (equal to 16 mm or $\frac{2}{3}''$) • Eyepiece graticule fitted within the eyepiece and visible in focus at the same time as the specimen.	1	

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 sole, uninterrupted use of the microscope for 55 minutes.

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MATERIALS TO BE SUPPLIED BY CAMBRIDGE

(i) Question papers.

RETURN OF EXAMINATION MATERIALS TO CAMBRIDGE

There are **no** materials to return to Cambridge, only question papers, Supervisor's Report forms and seating plan.

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 ON PRACTICAL BIOLOGY A LEVEL

May/June 2014

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 **1(a)(iv)** should be written in the Supervisor's Report which should be enclosed with the candidates' scripts. If the scripts are in several packets, please ensure that a copy of the Supervisor's Report is enclosed with each packet of scripts. The Invigilator should **not** carry out **Question 1**.

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[Turn over

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

Temperature of examination room .....°C

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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Cambridge International AS & A Level

Cambridge International Examinations
Cambridge International Advanced Subsidiary and Advanced Level

BIOLOGY **9700/34**

Advanced Practical Skills 2 **May/June 2014**

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 sole, uninterrupted, use of the microscope for at least 55 minutes.

Supervisors are advised to remind candidates that **all** substances in the examination should be treated with caution. Pipette fillers and safety goggles should be used where necessary.

In accordance with 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

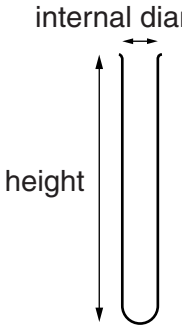
F = highly flammable substance

H = harmful or irritating substance

O = oxidising substance

T = toxic substance

N = harmful to environment



It is expected that the test-tubes provided are approximately 150 mm in height.

Other dimensions will be specified if needed 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

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 solution using a syringe. More of the solutions and reagents should be available if requested by candidates.
- Clean test-tubes and syringes are needed for each candidate.
- Fresh **A**, **P**, **W**, **I**, **S** and **V** are needed for each candidate.
- All solutions and reagents should be disposed of according to local safety regulations.

Summary of solutions, reagents and materials:

labelled	contents	hazard	volume /cm^3
A	0.1% ascorbic acid	[H] irritant	at least 15
P	10.0% ascorbic acid	[H] irritant	at least 15
W	distilled water	none	at least 100
I	iodine in potassium iodide solution	[H] irritant	at least 20
S	0.1% starch solution as indicator	none	at least 20

labelled	details
V	15 cm length of Visking tubing in a beaker containing water

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

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[Turn over

Preparation of solutions and reagents:

- Ascorbic acid solutions should be made up **within one hour** of the candidates starting Question 1 and kept out of direct sunlight.

[H] (i) **A**, at least 15 cm^3 of 0.1% ascorbic acid solution, in a covered beaker or container, labelled **A**.

This is prepared by making a 1.0% stock solution by dissolving 1.0 g of ascorbic acid in 80 cm^3 of distilled water in a beaker, making up to 100 cm^3 with distilled water and mixing well.

To make the 0.1% ascorbic acid add 10 cm^3 of this 1.0% stock solution to a beaker, make up to 100 cm^3 with distilled water and mix well.

This is sufficient for 6 candidates.

[H] (ii) **P**, at least 15 cm^3 of 10.0% ascorbic acid solution, labelled **P**.

This is prepared by dissolving 10 g of ascorbic acid in 80 cm^3 of distilled water in a beaker, making up to 100 cm^3 with distilled water and mixing well.

This is sufficient for 6 candidates.

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

This is sufficient for 1 candidate.

[H] (iv) **I**, at least 20 cm^3 of iodine solution in a beaker or container, labelled **I**.

- **I** may be made up the day before as long as it is stored in a cool and dark place overnight, e.g. refrigerator.

- **Please note** that this is **not** the same concentration of iodine solution which is used for the starch test so this solution needs to be made up specifically for this examination.

First moisten 1 g of potassium iodide with a few drops of distilled water in a beaker.
Add 0.5 g of iodine to this moistened potassium iodide.

Add a small volume of water and stir. When no more iodine appears to dissolve, add some more water and stir. Keep repeating this procedure until the volume is 100 cm^3.

The iodine needs to be mixed well to make sure that it dissolves.

This is sufficient for 5 candidates.

(v) **S**, at least 20 cm^3 of 0.1% starch solution in a beaker or container, labelled **S**.

This is prepared by making a stock solution of 1.0% starch solution by putting 1 g of starch 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.

To make the 0.1% starch solution add 10 cm^3 of this 1.0% stock solution to a beaker, make up to 100 cm^3 with distilled water and mix well.

The starch solution must be at room temperature for the examination.

This is sufficient for 5 candidates.

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Apparatus for each group of candidates 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, labelled **I**, with the means to wash it out. The top of the syringe barrel must be able to rest on top of the test-tubes provided (see Fig. 1.1)	1	
2 cm^3, 3 cm^3 or 5 cm^3 syringe	1	
Glass rod	1	
Container with tap water, (about 200 cm^3) labelled **For washing**	1	
Container, labelled **For waste**	1	
Paper towels	8	
Beaker or container to hold at least 50 cm^3 and no more than height 10 cm	1	
Test-tubes – with a diameter so that the top of the small syringe barrel can rest on the top (see Fig. 1.1)	9	
Test-tube rack(s) or container(s) to hold nine test-tubes	1	
Paperclip to hold the end of Visking tubing in place over the rim of the beaker	1	
White card or paper, approximately 10 cm by 10 cm	1	
Stop-clock 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. The results for **1(a)(v)** should be written in the Supervisor's Report (on pages 7 and 8), not on a spare question paper.
The Supervisor's Report and the candidates' seating plan should be enclosed with the candidates' scripts.
Please ensure that if the scripts are in several packets 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**.

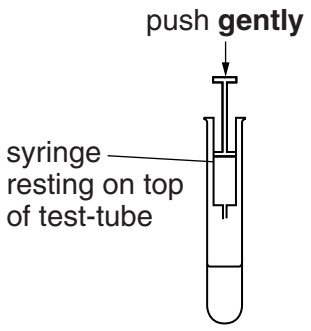


Fig. 1.1

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[Turn over

Question 2

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

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

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

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

(ii) Microscope with:

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

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. 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

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

SUPERVISOR'S REPORT ON PRACTICAL BIOLOGY A LEVEL

May/June 2014

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;

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[Turn over

Results for ***Question 1(a)(v)***

Temperature of examination room .....°C

4. Enclose a plan of work benches with the scripts, giving details of the candidate numbers of the places occupied by the candidates for each session. 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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Cambridge International AS & A Level

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BIOLOGY **9700/35**

Advanced Practical Skills 1 **May/June 2014**

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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Instructions for preparing apparatus

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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 sole, uninterrupted, use of the microscope for at least 55 minutes.

Supervisors are advised to remind candidates that **all** substances in the examination should be treated with caution. Pipette fillers and safety goggles should be used where necessary.

In accordance with 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

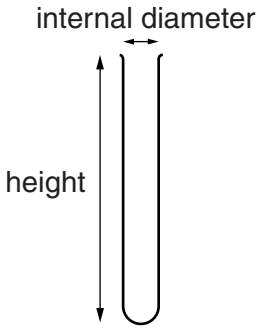
F = highly flammable substance

H = harmful or irritating substance

O = oxidising substance

T = toxic substance

N = harmful to environment



It is expected that the test-tubes provided are approximately 150 mm in height.
Other dimensions will be specified if needed 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

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 solution using a syringe. More of the solutions and reagents should be available if requested by candidates.
- Clean test-tubes and syringes are needed for each candidate.
- Fresh **G1**, **G2**, **S1**, **S2** and **S3** 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	percentage concentration	volume/cm^3
G1	glucose solution	none	0.1	at least 20
G2	glucose solution	none	1.0	at least 20
S1	starch solution	none	0.05	at least 20
S2	starch solution	none	1.0	at least 20
S3	mixture of 0.01% starch solution and 4% glucose solution	none	–	at least 20

Reagents to test for
- starch
- reducing sugars
- non-reducing sugars
- protein

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

Preparation of solutions and reagents:

You will need the following **stock** solutions:

4% glucose stock solution
This is prepared by sprinkling 4 g of glucose, a little at a time, onto the surface of 50 cm^3 of distilled water, stirring continuously, and making it up to 100 cm^3 with distilled water.

1% glucose stock solution
This is prepared by adding 25 cm^3 of the 4% glucose stock solution to 75 cm^3 of distilled water and stirring well.

1% starch stock solution
This is prepared by putting 1 g of 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.

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(i) **G1**, at least 20 cm^3 of 0.1% glucose solution, in a beaker or container, labelled **G1**.

This is prepared by adding 10 cm^3 of the 1% glucose stock solution to 90 cm^3 of distilled water and stirring well.

This is sufficient for 5 candidates.

(ii) **G2**, at least 20 cm^3 of 1% glucose stock solution, in a beaker or container, labelled **G2**.

This is sufficient for 1 candidate.

(iii) **S1**, at least 20 cm^3 of 0.05% starch solution, in a beaker or container, labelled **S1**.

This is prepared by adding 5 cm^3 of 1% starch stock solution to 95 cm^3 of distilled water and stirring well.

This is sufficient for 5 candidates.

(iv) **S2**, at least 20 cm^3 of 1% starch stock solution, in a beaker or container, labelled **S2**.

This is sufficient for 1 candidate.

(v) **S3**, at least 20 cm^3 of a solution, in a beaker or container, labelled **S3**, made up of 10 cm^3 of 0.01% starch solution and 10 cm^3 of 4% glucose stock solution.

The 0.01% starch solution is prepared by adding 1 cm^3 of the 1% starch stock solution to 99 cm^3 of distilled water and stirring well.

This is sufficient for 5 candidates.

(vi) **Reagents** to test for the biological molecules:

- starch
- reducing sugar
- non-reducing sugar
- protein

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

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

The reagents should be fresh for each candidate.

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Apparatus for each group of candidates 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	2	
Beaker or container with tap water, (about 200 cm^3) labelled **For washing**	1	
Beaker or container, labelled **For waste**	1	
Glass rod	1	
Pipette, plastic or with teat	3	
Spotting tile or white tile	1	
Paper towels	4	
Water-bath equipment: Bunsen burner, tripod, gauze, bench mat, at least a 400 cm^3 **clear** beaker with water, between 45 °C – 50 °C, suitable for a water-bath, matches and a thermometer –10 °C to 110 °C	1	
Test-tubes – suitable for heating, to hold not less than 20 cm^3 and not more than 50 cm^3	6	
Test-tube holder to handle hot test-tubes	1	
Test-tube rack(s) or container(s) to hold six test-tubes	1	
Stop-clock 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. The results for **1(a)(iii)** and for **1(a)(v)** should be written in the Supervisor's Report (on pages 7 and 8), not on a spare question paper.
The Supervisor's Report and the candidates' seating plan should be enclosed with the candidates' scripts.

Please ensure that if the scripts are in several packets 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**.

Question 2

On receipt of the slides, please check that they are labelled **K1** and **K2** 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 each slide, **K1** and **K2**, supplied by Cambridge will be equal to half the candidate entry. Therefore, half the candidates should start on **Question 1** and the other half should start on **Question 2**.

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For each candidate:

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

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

(i) Slide **K1** and slide **K2** (supplied by Cambridge)

(ii) Microscope with:

- 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, × 10 (equal to 16 mm or $\frac{2}{3}''$)
- 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 for the examination. Any lenses which are **not** × 10 or × 40 should be removed or replaced.

MATERIALS TO BE SUPPLIED BY CAMBRIDGE

(i) Question papers

(ii) Slides **K1** and **K2**

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 ON PRACTICAL BIOLOGY A LEVEL

May/June 2014

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 **1(a)(iii)** and for **1(a)(v)** 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 for **Question 1(a)(iii)** and for **1(a)(v)***

Temperature of examination room ..... °C

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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