Cambridge Assessment International Education

Cambridge International AS & A Level

BIOLOGY **9700/31**

Paper 3 Advanced Practical Skills 1 **October/November 2021**

CONFIDENTIAL INSTRUCTIONS

6802559628

This document gives details of how to prepare for and administer the practical exam.

The information in this document and the identity of any materials supplied by Cambridge International are confidential and must NOT reach candidates either directly or indirectly.

The supervisor must complete the report at the end of this document and return it with the scripts.

INSTRUCTIONS

- If you have any queries regarding these confidential instructions, contact Cambridge International stating the centre number, the syllabus and component number and the nature of the query.
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[Turn over

General information about practical exams

Centres must follow the guidance on science practical exams given in the *Cambridge Handbook*.

Safety

Supervisors must follow national and local regulations relating to safety and first aid.

Only those procedures described in the question paper should be attempted.

Supervisors must inform candidates that materials and apparatus used in the exam should be treated with caution. Suitable eye protection should be used where necessary.

The following hazard codes are used in these confidential instructions, where relevant:

C	corrosive	**MH**	moderate hazard
HH	health hazard	**T**	acutely toxic
F	flammable	**O**	oxidising
N	hazardous to the aquatic environment		

Hazard data sheets relating to substances used in this exam should be available from your chemical supplier.

Before the exam

- The packets containing the question papers must **not** be opened before the exam.
- It is assumed that standard school laboratory facilities, as indicated in the *Guide to Planning Practical Science*, will be available.
- Spare materials and apparatus for the tasks set must be available for candidates, if required.

During the exam

- It must be made clear to candidates at the start of the exam that they may request spare materials and apparatus for the tasks set.
- Where specified, the supervisor **must** perform the experiments and record the results as instructed. This must be done **out of sight** of the candidates, using the same materials and apparatus as the candidates.
- Any assistance provided to candidates must be recorded in the supervisor's report.
- If any materials or apparatus need to be replaced, for example, in the event of breakage or loss, this must be recorded in the supervisor's report.

After the exam

- The supervisor must complete a report for each practical session held and each laboratory used.
- Each packet of scripts returned to Cambridge International must contain the following items:
  - the scripts of the candidates specified on the bar code label provided
  - the supervisor's results relevant to these candidates
  - the supervisor's reports relevant to these candidates
  - seating plans for each practical session, referring to each candidate by candidate number
  - the attendance register.

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Specific information for this practical exam

During the exam, the supervisor or other competent biologist (**not** the invigilator) should obtain the results specified on the supervisor's report by following the relevant steps in the question paper. The results should be recorded in the space provided on the supervisor's report.

Organisation of the exam

- Half the candidates should start on Question 1 and the other candidates should start on Question 2.
- For Question 2, each candidate must have uninterrupted use of a microscope for at least 55 minutes.

Materials to be supplied by Cambridge International

- Slide **J1**

  On receipt of the slides, check that they are labelled **J1** and that no slides are broken. The slides should **not** be viewed in advance of the exam. The material on the slides is confidential and must **not** be disclosed to candidates.

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

Return of slides to Cambridge International

Immediately after the exam, the slides must be:

- returned to Cambridge International in the boxes in which they were received, using the self-adhesive label supplied. 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 International. The order form must **not** be included in the packet of scripts. Slides and boxes will be charged at the rate of £3.25 per slide plus £1 per box.

If the slides are not returned or purchased by the deadline stated on the order form, the charge will be £3.75 per slide plus £1 per box.

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Materials and apparatus for Question 1

Each candidate will need:

materials and apparatus for each candidate	quantity	✓
[MH] 5.0% potassium hydroxide solution in a beaker labelled **K**, provided at room temperature (see **Preparation of materials**)	at least 20 cm^3	
0.15% copper sulfate solution in a beaker labelled **C**, provided at room temperature (see **Preparation of materials**)	at least 20 cm^3	
1.0% protein solution in a beaker labelled **P**, provided at room temperature (see **Preparation of materials**)	at least 30 cm^3	
Distilled water, in a beaker labelled **W**, provided at room temperature	at least 50 cm^3	
0.2% protein solution in a beaker labelled **U**, provided at room temperature (see **Preparation of materials**)	at least 10 cm^3	
Beakers, capacity 50–100 cm^3	5	
10 cm^3 syringe	2	
Small syringes, 2 cm^3 or 3 cm^3	3	
Test-tubes, small, capacity 20–30 cm^3	7	
Test-tube rack to hold 7 test-tubes	1	
Container with approximately 400 cm^3 tap water, labelled **For washing**	1	
Container, capacity approximately 400 cm^3, labelled **For waste**	1	
Glass rod	1	
White paper, approximately 10 cm × 10 cm	1	
Paper towels	8	
Glass marker pen (permanent)	1	
Stop-clock or timer showing seconds	1	
Suitable eye protection	1	

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Preparation of materials

The 5.0% potassium hydroxide solution, **K**, and the 0.15% copper sulfate solution, **C**, may be prepared the day before the exam.

K and **C** should be kept in a covered container in a refrigerator overnight.

K and **C** should be at room temperature before the start of the exam.

[MH]

- **K**, 5.0% potassium hydroxide solution

  This is prepared by putting 5 g of potassium hydroxide **[C][MH]** in 80 cm^3 of distilled water and making up to 100 cm^3 with distilled water. Mix well.

- **C**, 0.15% copper sulfate solution

  This is prepared by putting 0.3 g of copper sulfate pentahydrate ($CuSO_4 \cdot 5H_2O$) **[C][MH][N]** in 80 cm^3 of distilled water and making up to 100 cm^3 with distilled water. Mix well. This is the stock solution of 0.3% copper sulfate solution.

  0.15% copper sulfate pentahydrate ($CuSO_4 \cdot 5H_2O$), **C**, is prepared by putting 50 cm^3 of the 0.3% stock solution into a beaker and putting 50 cm^3 of distilled water into the same beaker. Mix well.

- **P**, 1.0% albumen solution

  This must be prepared on the day of the exam. This is prepared by putting 1 g of albumen into a small volume of distilled water and mixing to make a paste. Make up to 100 cm^3 with distilled water. Mix well.

- **U**, 0.2% albumen solution

  This must be prepared on the day of the exam. This is prepared by putting 20 cm^3 of the 1.0% albumen solution into a beaker and putting 80 cm^3 distilled water into the same beaker. Mix well.

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Materials and apparatus for Question 2

Each candidate will need:

materials and apparatus for each candidate	quantity	✓
Microscope with: ● an eyepiece lens, ×10 magnification ● a low-power objective lens, ×10 magnification ● a high-power objective lens, ×40 magnification	1 between 2	
Slide **J1**	1 between 2	

Preparation of materials

- Microscope

  Any lenses which are **not** ×10 or ×40 should be removed or replaced.

  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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Supervisor's report

Syllabus and component number	9	7	0	0	/	3	1

Centre number					

Centre name .....

Time of the practical session .....

Laboratory name/number .....

Give details of any difficulties experienced by the centre or by candidates (include the relevant candidate names and candidate numbers).

You must include:
- any difficulties experienced by the centre in the preparation of materials
- any difficulties experienced by candidates, e.g. due to faulty materials or apparatus
- any specific assistance given to candidates.

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Temperature of exam room ..... °C

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

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

Declaration

1 Each packet that I am returning to Cambridge International contains all of the following items:
- the scripts of the candidates specified on the bar code label provided
- the supervisor's results relevant to these candidates
- the supervisor's reports relevant to these candidates
- seating plans for each practical session, referring to each candidate by candidate number
- the attendance register.

2 Where the practical exam has taken place in more than one practical session, I have clearly labelled the supervisor's results, supervisor's reports and seating plans with the time and laboratory name/number for each practical session.

3 I have included details of difficulties relating to each practical session experienced by the centre or by candidates.

4 I have reported any other adverse circumstances affecting candidates, e.g. illness, bereavement or temporary injury, directly to Cambridge International on a *special consideration form*.

Signed ..... (supervisor)

Name (in block capitals) .....

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Cambridge Assessment International Education

Cambridge International AS & A Level

BIOLOGY **9700/33**

Paper 3 Advanced Practical Skills 1 **October/November 2021**

CONFIDENTIAL INSTRUCTIONS

1472662211

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Specific information for this practical exam

During the exam, the supervisor or other competent biologist (**not** the invigilator) should obtain the results specified on the supervisor's report by following the relevant steps in the question paper. The results should be recorded in the space provided on the supervisor's report.

Organisation of the exam

- Half the candidates should start on Question 1 and the other candidates should start on Question 2.
- For Question 2, each candidate must have uninterrupted use of a microscope for at least 55 minutes.

Materials to be supplied by Cambridge International

- Amylase (bacterial)
- Slide **K1**

  On receipt of the slides, check that they are labelled **K1** and that no slides are broken. The slides should **not** be viewed in advance of the exam. The material on the slides is confidential and must **not** be disclosed to candidates.

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

Return of slides to Cambridge International

Immediately after the exam, the slides must be:

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If the slides are not returned or purchased by the deadline stated on the order form, the charge will be £3.75 per slide plus £1 per box.

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Materials and apparatus for Question 1

Each candidate will need:

materials and apparatus for each candidate	quantity	✓
Starch and iodine solution, in a beaker, labelled **J**, provided at room temperature (see **Preparation of materials**) Note: This item is described differently in the question paper. This is intentional. Candidates should **not** be informed.	at least 60 cm^3	
2.0% amylase solution, in a beaker, labelled **E**, provided at room temperature (see **Preparation of materials**).	at least 25 cm^3	
Distilled water, in a beaker or container, labelled **W**, provided at room temperature	at least 100 cm^3	
10 cm^3 syringes	2	
5 cm^3 syringes	2	
Test-tubes small, capacity 20–30 cm^3	5	
Test-tube rack to hold 5 test-tubes	1	
Beakers, capacity 50–100 cm^3	5	
Beaker, capacity approximately 400 cm^3, labelled **water-bath**	1	
Beaker, capacity approximately 400 cm^3, with approximately 200 cm^3 water at 60–70 °C and labelled **hot water** The Supervisor may use a thermostatically controlled water-bath to provide this hot water for candidates.	1	
Beaker, capacity approximately 400 cm^3, with approximately 200 cm^3 of cold tap water, labelled **cold water**	1	
Container with approximately 300 cm^3 tap water, labelled **For washing**	1	
Container, capacity approximately 400 cm^3, labelled **For waste**	1	
Glass rod	1	
White paper, approximately 10 cm × 10 cm	1	
Paper towels	8	
Glass marker pen (permanent)	1	
Stop-clock or timer showing seconds	1	
Thermometer, –10 °C to +110 °C	1	
Suitable eye protection	1	

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Preparation of materials

The stock solution of **iodine** and **starch** may be prepared the day before the exam and kept in a covered container in a refrigerator overnight.

Iodine and **starch** should be at room temperature before the start of the exam.

The 0.01 mol dm^{-3} iodine solution must be prepared no more than one hour before the start of the exam.

- **J**, mixture of starch solution and iodine solution

  This is prepared by putting 100 cm^3 of 0.5% starch solution into a beaker. The starch solution should be at room temperature. Add 0.01 mol dm^{-3} iodine solution one drop at a time until the blue colour remains. Check that the blue colour is visible when given to candidates. If not add more iodine as necessary.

  Note: This item is described differently in the question paper. This is intentional. Candidates should **not** be informed.

- 0.5% starch solution (for **J**)

  This is prepared by putting 0.5 g of **soluble** starch into a small volume of distilled water and mixing to make a paste. Make up to 100 cm^3 with hot distilled water. Mix well. It may be necessary to heat the solution to dissolve the starch.

  The starch solution must be at room temperature before making **J**.

[N]

- 0.01 mol dm^{-3} iodine solution (for **J**)

  Stock solution of 0.1 mol dm^{-3} iodine solution (may be prepared the day before the exam)

  This is prepared by putting 8.0 g of potassium iodide in a beaker. Add 2 cm^3 of distilled water to moisten the potassium iodide. Add 2.5 g of iodine **[MH] [N]** (if necessary, crush into small pieces) to the moist potassium iodide, add 15 cm^3 of distilled water, stirring well.
  When no more iodine dissolves, add another 15 cm^3 of distilled water, stirring well.
  Repeat with two more volumes of 15 cm^3 of distilled water and then make up to a total volume of 100 cm^3.
  It is not essential that all the iodine dissolves.
  This gives a red-brown coloured 0.1 mol dm^{-3} iodine solution.

  On the day of the exam (no more than one hour before the start) put 10 cm^3 of the stock solution of 0.1 mol dm^{-3} iodine solution into a beaker and make up to 100 cm^3 with distilled water. Mix well. This makes the 0.01 mol dm^{-3} iodine solution used to make **J**.

- **E**, 2% amylase solution

  This is prepared by putting 2 cm^3 of amylase solution (supplied by Cambridge International) into a beaker. Make up to 100 cm^3 with distilled water. Mix well.

Materials and apparatus for Question 2

Each candidate will need:

materials and apparatus for each candidate	quantity	✓
Microscope with: ● an eyepiece lens, ×10 magnification ● a low-power objective lens, ×10 magnification ● a high-power objective lens, ×40 magnification	1 between 2	
Slide **K1**	1 between 2	

Preparation of materials

- Microscope

  Any lenses which are **not** ×10 or ×40 should be removed or replaced.

  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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Supervisor's report

Syllabus and component number	9	7	0	0	/	3	3
Centre number							

Centre name .....

Time of the practical session .....

Laboratory name/number .....

Give details of any difficulties experienced by the centre or by candidates (include the relevant candidate names and candidate numbers).

You must include:

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Temperature of exam room ..... °C

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

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Signed ..... (supervisor)

Name (in block capitals) .....

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Cambridge Assessment International Education

Cambridge International AS & A Level

BIOLOGY **9700/34**

Paper 3 Advanced Practical Skills 2 **October/November 2021**

CONFIDENTIAL INSTRUCTIONS



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  - seating plans for each practical session, referring to each candidate by candidate number
  - the attendance register.

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Organisation of the exam

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- For Question 2, each candidate must have uninterrupted use of a microscope for at least 55 minutes.

Materials to be supplied by Cambridge International

- Slide **L1**

  On receipt of the slides, check that they are labelled **L1** and that no slides are broken. The slides should **not** be viewed in advance of the exam. The material on the slides is confidential and must **not** be disclosed to candidates.

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Return of slides to Cambridge International

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If the slides are not returned or purchased by the deadline stated on the order form, the charge will be £3.75 per slide plus £1 per box.

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Materials and apparatus for Question 1

Each candidate will need:

materials and apparatus for each candidate	quantity	✓
10% glucose solution in a beaker, labelled **R** (see **Preparation of materials**)	at least 30 cm^3	
20% glucose solution in a beaker, labelled **G** (see **Preparation of materials**)	at least 30 cm^3	
[MH][N] Benedict's solution (qualitative) in a beaker, labelled **B**	at least 30 cm^3	
Distilled water, in a beaker, labelled **W**, provided at room temperature	at least 100 cm^3	
15 cm lengths of Visking (dialysis) tubing in a beaker of distilled water, labelled **V**, provided at room temperature	2	
10 cm^3 syringes	2	
2 cm^3 or 3 cm^3 syringes	2	
Teat pipette, plastic or glass	1	
Test-tubes, small, capacity 20–30 cm^3. Label one small test-tube **P2** and label another one **Q2**. The remaining five test-tubes are unlabelled.	7	
Test-tubes, large, capacity 40–55 cm^3. Label one large test-tube **P1** and label the other one **Q1**.	2	
Test-tube holder to hold hot test-tubes	1	
Test-tube rack to hold 7 small test-tubes	1	
Test-tube rack to hold 2 large test-tubes	1	
Beakers, capacity 50–100 cm^3	5	
Beaker, capacity 500–600 cm^3, containing approximately 500 cm^3 of tap water at room temperature, labelled **P**	1	
Beaker, capacity 500–600 cm^3, containing approximately 500 cm^3 water at approximately 70 °C, labelled **Q**	1	
Bunsen burner, tripod, gauze, bench mat and lighter or matches	1	
Container with approximately 200 cm^3 tap water, labelled **For washing**	1	
Container, capacity at least 400 cm^3, labelled **For waste**	1	
Paper clips to fit easily over the rim of a large test-tube	2	
Glass rod	1	
Paper towels	12	
Glass marker pen, permanent	1	

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materials and apparatus for each candidate	quantity	✓
Stop-clock or timer showing seconds	1	
Thermometer, –10 °C to +110 °C	1	
Suitable eye protection	1	

Preparation of materials

The glucose solutions, **R** and **G** may be prepared the day before the exam and kept in a covered container in a refrigerator overnight.

R and **G** should be at room temperature before the start of the exam.

- **R**, 10% reducing sugar solution

  This is prepared by sprinkling 10.0 g of glucose a little at a time onto 80 cm^3 of distilled water, stirring continuously. Make up to 100 cm^3 with distilled water.

  Mix well before distributing into beakers for individual candidates.

- **G**, 20% reducing sugar solution

  This is prepared by sprinkling 20.0 g of glucose a little at a time onto 80 cm^3 of distilled water, stirring continuously. Make up to 100 cm^3 with distilled water.

  Mix well before distributing into beakers for individual candidates.

Materials and apparatus for Question 2

Each candidate will need:

materials and apparatus for each candidate	quantity	✓
Microscope with: ● an eyepiece lens, ×10 magnification ● a low-power objective lens, ×10 magnification ● a high-power objective lens, ×40 magnification	1 between 2	
Slide **L1**	1 between 2	

Preparation of materials

- Microscope

  Any lenses which are **not** ×10 or ×40 should be removed or replaced.

  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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Supervisor's report

Syllabus and component number	9	7	0	0	/	3	4
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Centre name .....

Time of the practical session .....

Laboratory name/number .....

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Temperature of exam room ..... °C

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

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

Declaration

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Signed ..... (supervisor)

Name (in block capitals) .....

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Cambridge Assessment International Education

Cambridge International AS & A Level

BIOLOGY **9700/35**

Paper 3 Advanced Practical Skills 1 **October/November 2021**

CONFIDENTIAL INSTRUCTIONS

7585619210

This document gives details of how to prepare for and administer the practical exam.

The information in this document and the identity of any materials supplied by Cambridge International are confidential and must NOT reach candidates either directly or indirectly.

The supervisor must complete the report at the end of this document and return it with the scripts.

INSTRUCTIONS

- If you have any queries regarding these confidential instructions, contact Cambridge International stating the centre number, the syllabus and component number and the nature of the query.
  email info@cambridgeinternational.org
  phone +44 1223 553554

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[Turn over

General information about practical exams

Centres must follow the guidance on science practical exams given in the *Cambridge Handbook*.

Safety

Supervisors must follow national and local regulations relating to safety and first aid.

Only those procedures described in the question paper should be attempted.

Supervisors must inform candidates that materials and apparatus used in the exam should be treated with caution. Suitable eye protection should be used where necessary.

The following hazard codes are used in these confidential instructions, where relevant:

C	corrosive	**MH**	moderate hazard
HH	health hazard	**T**	acutely toxic
F	flammable	**O**	oxidising
N	hazardous to the aquatic environment		

Hazard data sheets relating to substances used in this exam should be available from your chemical supplier.

Before the exam

- The packets containing the question papers must **not** be opened before the exam.
- It is assumed that standard school laboratory facilities, as indicated in the *Guide to Planning Practical Science*, will be available.
- Spare materials and apparatus for the tasks set must be available for candidates, if required.

During the exam

- It must be made clear to candidates at the start of the exam that they may request spare materials and apparatus for the tasks set.
- Where specified, the supervisor **must** perform the experiments and record the results as instructed. This must be done **out of sight** of the candidates, using the same materials and apparatus as the candidates.
- Any assistance provided to candidates must be recorded in the supervisor's report.
- If any materials or apparatus need to be replaced, for example, in the event of breakage or loss, this must be recorded in the supervisor's report.

After the exam

- The supervisor must complete a report for each practical session held and each laboratory used.
- Each packet of scripts returned to Cambridge International must contain the following items:
  - the scripts of the candidates specified on the bar code label provided
  - the supervisor's results relevant to these candidates
  - the supervisor's reports relevant to these candidates
  - seating plans for each practical session, referring to each candidate by candidate number
  - the attendance register.

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Specific information for this practical exam

During the exam, the supervisor or other competent biologist (**not** the invigilator) should obtain the results specified on the supervisor's report by following the relevant steps in the question paper. The results should be recorded in the space provided on the supervisor's report.

Organisation of the exam

- Half the candidates should start on Question 1 and the other candidates should start on Question 2.
- For Question 2, each candidate must have uninterrupted use of a microscope for at least 55 minutes.

Materials to be supplied by Cambridge International

- Slide **M1**

  On receipt of the slides, check that they are labelled **M1** and that no slides are broken. The slides should **not** be viewed in advance of the exam. The material on the slides is confidential and must **not** be disclosed to candidates.

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

Return of slides to Cambridge International

Immediately after the exam, the slides must be:

- returned to Cambridge International in the boxes in which they were received, using the self-adhesive label supplied. 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 International. The order form must **not** be included in the packet of scripts. Slides and boxes will be charged at the rate of £3.25 per slide plus £1 per box.

If the slides are not returned or purchased by the deadline stated on the order form, the charge will be £3.75 per slide plus £1 per box.

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Materials and apparatus for Question 1

Each candidate will need:

materials and apparatus for each candidate	quantity	✓
Plant extract in a beaker, labelled **P**, provided at room temperature (see **Preparation of materials**)	at least 40 cm^3	
[MH] 3.0% (10 vol) hydrogen peroxide solution in a covered beaker, labelled **H**, provided at room temperature (see **Preparation of materials**)	at least 30 cm^3	
[MH] 0.3% (2 vol) hydrogen peroxide solution in a covered beaker, labelled **U**, provided at room temperature (see **Preparation of materials**)	at least 10 cm^3	
Distilled water, in a beaker, labelled **W**, provided at room temperature	at least 100 cm^3	
10 cm^3 syringes	3	
Beakers, capacity 50–100 cm^3	6	
Beaker, capacity 200–300 cm^3	1	
Plastic or rubber tubing, length approximately 20 cm, to give an airtight fit with the nozzle of a 10 cm^3 syringe	1	
Test-tube, large, capacity approximately 40–55 cm^3	1	
Test-tube rack to hold 1 large test-tube	1	
Glass rod	1	
Container with approximately 400 cm^3 tap water, labelled **For washing**	1	
Container, capacity approximately 400 cm^3, labelled **For waste**	1	
Paper towels	12	
Glass marker pen, permanent	1	
Stop-clock or timer, showing seconds	1	
Gloves	2	
Suitable eye protection	1	

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Preparation of materials

The mung beans must be soaked for 24 hours before the exam.
You must pre-test the plant extract in advance of the examination in case you need to replace the mung beans.

- **P**, Plant extract solution

  Mung beans must be soaked for approximately 24 hours in tap water.

  On the day of the exam the plant extract solution can be prepared using 10 g of soaked mung beans.

  Put approximately 10 g of soaked mung beans into a container with 100 cm^3 of water, liquidise until a paste is formed.

  Strain the mixture through a fine sieve or muslin and retain the liquid plant extract solution. This may contain small pieces of plant material.

  This should produce at least 80 cm^3 of plant extract solution.

  Pre-test for P:

  Put 2 cm^3 of **P** into a test-tube.

  Put 2 cm^3 of **H** into the same test-tube.

  You should observe bubbles appearing within 30 seconds. If the bubbles take longer than 30 seconds, **either** increase the mass of mung beans **or** replace the mung beans.

[MH] - **H**, 3.0% hydrogen peroxide solution

  This is prepared on the day of the exam. Put 50 cm^3 of 6.0% (20 vol) hydrogen peroxide solution into 50 cm^3 of distilled water. Mix well.

[MH] - **U**, 0.3% hydrogen peroxide solution

  This is prepared on the day of the exam. Put 10 cm^3 of 3.0% (10 vol) hydrogen peroxide solution into 90 cm^3 of distilled water. Mix well.

Materials and apparatus for Question 2

Each candidate will need:

materials and apparatus for each candidate	quantity	✓
Microscope with: ● an eyepiece lens, ×10 magnification ● a low-power objective lens, ×10 magnification ● a high-power objective lens, ×40 magnification	1 between 2	
Slide **M1**	1 between 2	

Preparation of materials

- Microscope

  Any lenses which are **not** ×10 or ×40 should be removed or replaced.

  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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Supervisor's report

Syllabus and component number	9	7	0	0	/	3	5

Centre number					

Centre name .....

Time of the practical session .....

Laboratory name/number .....

Give details of any difficulties experienced by the centre or by candidates (include the relevant candidate names and candidate numbers).

You must include:

- any difficulties experienced by the centre in the preparation of materials
- any difficulties experienced by candidates, e.g. due to faulty materials or apparatus
- any specific assistance given to candidates.

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Temperature of exam room …….°C

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

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

Declaration

1 Each packet that I am returning to Cambridge International contains all of the following items:
- the scripts of the candidates specified on the bar code label provided
- the supervisor's results relevant to these candidates
- the supervisor's reports relevant to these candidates
- seating plans for each practical session, referring to each candidate by candidate number
- the attendance register.

2 Where the practical exam has taken place in more than one practical session, I have clearly labelled the supervisor's results, supervisor's reports and seating plans with the time and laboratory name/number for each practical session.

3 I have included details of difficulties relating to each practical session experienced by the centre or by candidates.

4 I have reported any other adverse circumstances affecting candidates, e.g. illness, bereavement or temporary injury, directly to Cambridge International on a *special consideration form*.

Signed ..... (supervisor)

Name (in block capitals) .....

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Cambridge Assessment International Education

Cambridge International AS & A Level

BIOLOGY **9700/36**

Paper 3 Advanced Practical Skills 2 **October/November 2021**

CONFIDENTIAL INSTRUCTIONS

2331995708

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Materials and apparatus for Question 1

Each candidate will need:

materials and apparatus for each candidate	quantity	✓
10.0% catalase solution in a small beaker, labelled **E**, provided at room temperature (see **Preparation of materials**)	at least 30 cm^3	
2.0% catalase solution in a small beaker, labelled **F1**, provided at room temperature (see **Preparation of materials**)	at least 20 cm^3	
Distilled water, in a small beaker, labelled **F2**, provided at room temperature	at least 20 cm^3	
1% hydrogen peroxide solution, in a small beaker, labelled **H**, provided at room temperature	at least 50 cm^3	
10% detergent solution, in a small beaker, labelled **D** (see **Preparation of materials**)	at least 20 cm^3	
Distilled water, in a beaker or container, labelled **W**, provided at room temperature	at least 200 cm^3	
10 cm^3 syringes	2	
5 cm^3 syringe	1	
1 cm^3 syringes	2	
Teat pipette, plastic or glass	1	
Beakers, capacity 50–100 cm^3	5	
Test-tubes, small, capacity 20–30 cm^3	8	
Test-tube rack to hold 8 small test-tubes	1	
Container with approximately 200 cm^3 tap water, labelled **For washing**	1	
Container, capacity approximately 300 cm^3, labelled **For waste**	1	
Paper towels	10	
Glass marker pen (permanent)	1	
Stop-clock or timer showing seconds	1	
Suitable eye protection	1	
Glass rod	1	
Ruler, with mm scale	1	

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Preparation of materials

Catalase solution, **E**, must be prepared on the day of the exam.

[MH]

- **E**, 10.0% catalase solution

  This is prepared by peeling approximately 200 g of potato and cutting into small pieces. Liquidise or blend with 50 cm^3 of distilled water. Strain the mixture through a fine sieve or muslin into a beaker. Each candidate needs 30 cm^3 of the filtrate.

  Any variety of potato may be used, for example white potato *Solanum tuberosum*.

  The potato should be as fresh as possible to avoid the effects of storage.

  Pre-test for **E**:
  Put 1 cm^3 of **E** into a test-tube. Put 1 cm^3 of **H** into the same test-tube.
  You should observe bubbles appearing within 60 seconds. If the bubbles take longer than 60 seconds, **either** increase the mass of potato **or** replace the potato.

- **F1**, food sample (2.0% catalase solution)

  This is prepared by putting 20 cm^3 of **E** into 80 cm^3 of distilled water. Mix well.

- **D**, 10% detergent solution

  This is prepared by putting 5 cm^3 of liquid detergent (washing-up liquid) into 45 cm^3 of distilled water. Mix well.

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Materials and apparatus for Question 2

Each candidate will need:

materials and apparatus for each candidate	quantity	✓
Microscope with: ● an eyepiece lens, ×10 magnification ● a low-power objective lens, ×10 magnification ● a high-power objective lens, ×40 magnification	1 between 2	
Slide **N1**	1 between 2	

Preparation of materials

- Microscope

  Any lenses which are **not** ×10 or ×40 should be removed or replaced.

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

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

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Name (in block capitals) .....

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