Cambridge Assessment International Education

Cambridge IGCSE™

CO-ORDINATED SCIENCES **0654/53**

Paper 5 Practical Test **May/June 2021**

CONFIDENTIAL INSTRUCTIONS

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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  phone +44 1223 553554

DC (RW/CB) 206270/3

[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.

Specific information for this practical exam

During the exam, the supervisor (**not** the invigilator) must do the experiments in Questions 1, 2, 3 and 4 and record the results on a spare copy of the question paper, clearly labelled 'supervisor's results'.

For Question 1

Each candidate will require:

(i) a slice of sweet/bell pepper on a white tile (see note 1)
(ii) 30 cm ruler graduated in mm
(iii) spotting tile
[MH] [N] (iv) iodine solution with dropper, labelled **iodine solution**
[C] (v) biuret solution with dropper, labelled **biuret solution**
(vi) 5 cm^3 of 1% egg white suspension provided in a small beaker with a dropper, labelled **egg white** (see note 2)
(vii) 5 cm^3 of potato puree provided in a small beaker with a dropper, labelled **potato puree** (see note 3).

Notes

1. The pepper should be freshly sliced to produce a ring as shown in Fig. 1.1.

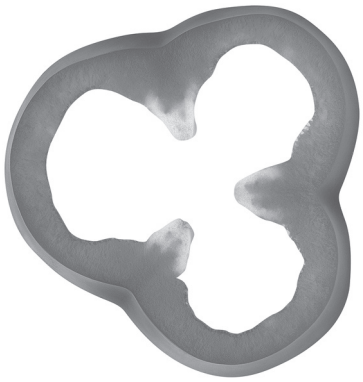

Fig. 1.1

2. The egg white suspension can be made using 1 g powdered egg albumen in 100 cm^3 water. This should be made immediately prior to the examination.

3. Uncooked potato should be liquidised with sufficient water so that it can easily be poured. This should be made immediately prior to the examination.

For Question 2

Each candidate will require:

(i) a specimen bottle or similar with a screw top, labelled **A** (see note 1)
(ii) a specimen bottle or similar with a screw top, labelled **B** (see note 2)
(iii) a specimen bottle or similar with a screw top, labelled **C** (see note 3)
(iv) hydrogencarbonate indicator with dropper, labelled **hydrogencarbonate indicator**.

Notes

1. The bottle should be half-filled with water and acid or buffer solution. It should be tested prior to the examination so that a **purple** coloured solution is produced when a few drops of hydrogencarbonate indicator are added.

2. The bottle should be half-filled with water and alkali or buffer solution. It should be tested prior to the examination so that a **yellow** coloured solution is produced when a few drops of hydrogencarbonate indicator are added.

3. The bottle should be half-filled with water and acid or alkali or buffer solution. It should be tested prior to the examination so that a **red** coloured solution is produced when a few drops of hydrogencarbonate indicator are added.

For Question 3

Each candidate will require:

[C] [N] **(i)** 20 cm^3 aqueous sodium hydroxide, 0.6 $mol\,dm^{-3}$, labelled **0.6 M aqueous sodium hydroxide**
[MH] [N] **(ii)** 20 cm^3 aqueous sodium hydroxide, 0.4 $mol\,dm^{-3}$, labelled **0.4 M aqueous sodium hydroxide**
[MH] [N] **(iii)** 20 cm^3 aqueous sodium hydroxide, 0.2 $mol\,dm^{-3}$, labelled **0.2 M aqueous sodium hydroxide**
(iv) 20 cm^3 aqueous sodium hydroxide, 0.1 $mol\,dm^{-3}$, labelled **0.1 M aqueous sodium hydroxide**
(v) 50 cm^3 of dilute hydrochloric acid, 2 $mol\,dm^{-3}$, labelled **dilute hydrochloric acid**
[C] [F] [HH] [MH] [N] [T] **(vi)** access to methyl orange in a dropping bottle or supplied with a dropping pipette, labelled **methyl orange**
(vii) 10 cm^3 measuring cylinder
(viii) 4 conical flasks
(ix) white tile
(x) dropping pipette.

For Question 4

Each candidate will require:

(i) retort stand, clamp and boss (see note 1)
(ii) 2 × 250 cm^3 beakers, one labelled **X** and the other labelled **Y** (see note 2)
(iii) thermometer –10 to 110 °C, graduated in 1 °C intervals (see note 1)
(iv) supply of hot water (see notes 3 and 4)
(v) stopwatch
(vi) stirrer
(vii) paper towels.

Notes

1. The apparatus must be set up for the candidates as shown in Fig. 4.1.

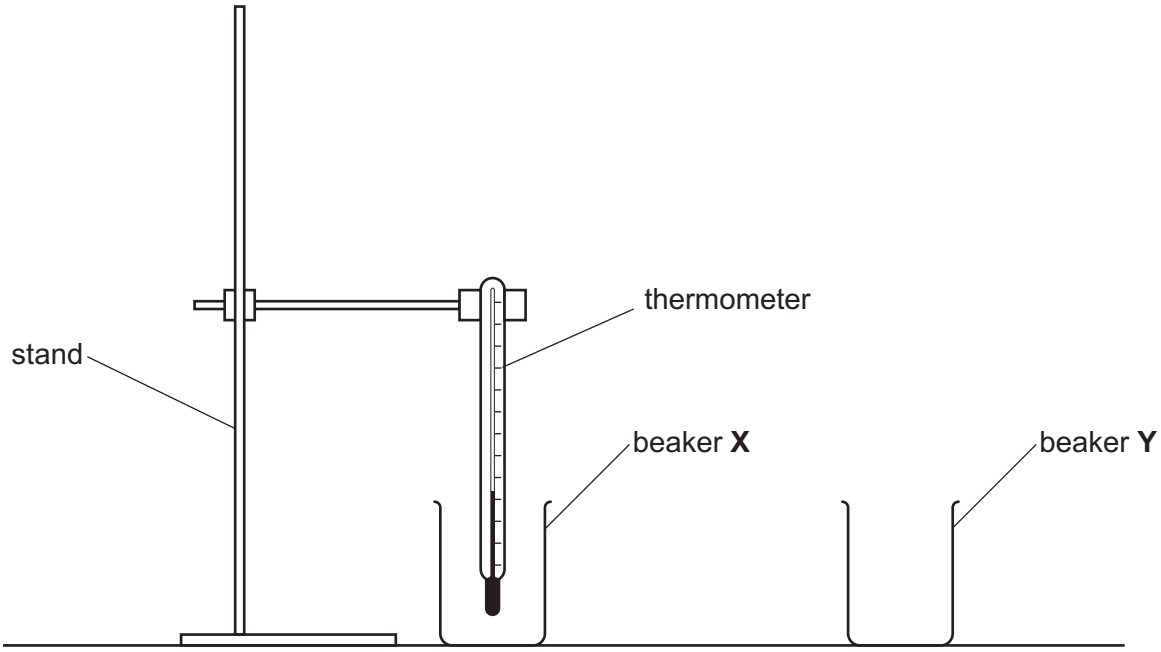

Fig. 4.1

Ensure that the top of the thermometer bulb is <u>below</u> the 100 cm^3 level of beaker **X** and that the clamp does not obscure the scale of the thermometer. Ensure that beaker **X** is not on the base of the stand.

2. If the beakers do not have volume graduations, the 200 cm^3 level must be marked on the outside of beaker **X** and the 100 cm^3 level marked on the outside of beaker **Y**.

3. Each candidate will require approximately 500 cm^3 of hot water. The hot water should be supplied and maintained at a temperature of approximately 80 °C.

4. Candidates should be warned of the dangers of burns and scalds when using very hot water.

Action at Changeover

Empty the beakers.

Arrange the apparatus as shown in Fig. 4.1.

For Question 5

No apparatus is required for this question.

Supervisor's report

Syllabus and component number | | | | | / | | |

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.

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) .....