



CO-ORDINATED SCIENCES

0654/52

Paper 5 Practical Test

October/November 2019

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.

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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This document consists of **7** printed pages and **1** blank page.

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, 4 and 5 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) approximately 10 cm³ natural yogurt in a small beaker labelled **yogurt** (see note 1)
- (ii) approximately 10 cm³ rice water in a small beaker labelled **rice water** (see note 2)
- (iii) Benedict's solution with dropper labelled **Benedict's solution**
- [C] (iv) biuret solution with dropper labelled **biuret solution**
- (v) iodine solution with dropper labelled **iodine solution**
- (vi) 6 × test-tubes 125 × 15 mm and means of supporting them
- (vii) access to a hot water bath at a temperature of approximately 80 °C.

Note 1

The yogurt must test positive with Benedict's solution. Glucose may be added to achieve this.

The yogurt must be able to be poured. Water may be added to achieve this.

Note 2

To make the rice water, pour boiling water to just cover some rice grains and leave for about 10 minutes. Decant off the liquid to use as the rice water.

Note 3

Candidates should be told to take care and be warned of the dangers of burns and scalds when using hot water.

For Question 2

Each candidate will require:

- (i) half of a freshly cut tomato in a shallow dish (see note)
- (ii) 30 cm ruler graduated in mm.

Note

The tomato should be cut as shown in the photograph and covered until the examination.



For Question 3

Each candidate will require:

- [C][N] (i) approximately 25 cm³ 0.5 mol dm⁻³ copper sulfate solution labelled **copper sulfate**
 [F][N] (ii) approximately 3 g zinc powder labelled **zinc** (see note)
 (iii) plastic cup
 (iv) -10 to +110 stirring thermometer in 1 °C graduations
 (v) 25 cm³ measuring cylinder
 (vi) 1 × test-tube (approximately 125 mm × 15 mm) and means to support it
 (vii) stopclock.

Note

The zinc powder should be taken from a recently purchased sample.

For Question 4

Each candidate will require:

- [MH] (i) approximately 10 cm³ 0.4 mol dm⁻³ sodium hydroxide solution labelled **J**
 (ii) approximately 10 cm³ 2.0 mol dm⁻³ hydrochloric acid labelled **H**
 (iii) approximately 10 cm³ 1.0 mol dm⁻³ hydrochloric acid labelled **L**
 (iv) approximately 10 cm³ 0.5 mol dm⁻³ hydrochloric acid labelled **K**
 [MH] (v) approximately 10 cm³ 0.1 mol dm⁻³ copper sulfate solution labelled **copper sulfate**
 (vi) approximately 10 cm³ 0.1 mol dm⁻³ barium nitrate solution labelled **barium nitrate**
 [N] (vii) approximately 10 cm³ 0.05 mol dm⁻³ silver nitrate solution labelled **silver nitrate**
 (viii) 30 marble chips (2–4 mm)
 (ix) 12 × test-tubes (approx. 125 mm × 15 mm) and a means to support them.

Note

Centres may provide fewer test-tubes, the minimum being 4 test-tubes (125 mm × 15 mm). If this is the case, candidates will have to rinse test-tubes with distilled water which must be provided.

For Question 5

Each candidate will require:

- (i) 2 × 250 cm³ beakers, labelled **P** and **Q** (see note 1)
- (ii) access to a balance capable of measuring to the nearest gram
- (iii) 100 cm³ measuring cylinder
- (iv) supply of hot and cold (room temperature) water – candidates will need 100 cm³ of each (see notes 2 and 3)
- (v) thermometer –10 °C to 110 °C, graduated in 1 °C intervals
- (vi) stirrer.

Note 1

A line must be drawn on the outside of beaker **Q** to indicate a volume of 100 cm³. A permanent marker pen is suitable for this purpose.

Note 2

The hot and cold water is to be provided by the supervisor to each candidate. The hot water should be supplied at a temperature of approximately 80 °C.

Note 3

Candidates should be told to take care and be warned of the danger of burns and scalds when using hot water.

Action at changeover

Empty and dry the beakers and ensure that more supplies of water are available.

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Supervisor's report

Syllabus and component number

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Centre number

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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.

Space for supervisor to record results, if relevant, e.g. temperature of the laboratory; results for Question 1.

Declaration

- 1 Each packet that I am returning to Cambridge International contains 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)