Cambridge Assessment International Education

Cambridge Pre-U

CHEMISTRY **9791/04**

Paper 4 Practical **For examination from 2020**

SPECIMEN CONFIDENTIAL INSTRUCTIONS

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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
  fax +44 1223 553558

This specimen paper has been updated for assessments from 2020. The specimen questions and mark schemes remain the same. The layout and wording of the front covers have been updated to reflect the new Cambridge International branding and to make instructions clearer for candidates.

This syllabus is regulated for use in England, Wales and Northern Ireland as a Cambridge International Level 3 Pre-U Certificate.

This document has **8** pages. Blank pages are indicated.

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

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 all the experiments and record the results on a spare copy of the question paper, clearly labelled 'supervisor's results'.

If chemicals are prepared in more than one batch, clearly labelled supervisor's results must be provided for each batch. The candidates using each batch must be listed on the supervisor's report.

Apparatus

The apparatus listed must be provided to each candidate.

1 × 250 cm^3 beaker
1 × 50 cm^3 burette
1 × burette clamp and stand
1 × small funnel for filling burette
1 × 25 cm^3 pipette
1 × pipette filler
1 × foamed plastic (expanded polystyrene) cup
1 × –10 to +110 °C thermometer with divisions of 1.0 °C
1 × heat proof mat
1 × Bunsen burner
1 × glass rod
2 × dropping pipettes
2 × boiling tubes
6 × test-tubes
1 × test-tube holder
1 × test-tube rack
1 × wash bottle of distilled water
paper towels
red and blue litmus papers
aluminium foil for testing nitrate/nitrite
wooden splints
apparatus normally used in the centre in testing for carbon dioxide with limewater

Candidates are expected to rinse and reuse test-tubes and boiling tubes where necessary. Additional tubes should be available.

Materials

The materials listed in the table must be provided to each candidate.

label	per candidate	identity	notes
[C] FA 1	50 cm^3	2.00 mol dm^{-3} sodium hydroxide	Dissolve 80.0 g of NaOH **[C]** in each dm^3 of solution. **Care** – *the process of solution is exothermic and any concentrated solution is very corrosive.*
[MH] FA 2	70 cm^3	0.75 mol dm^{-3} sulfuric acid	Cautiously pour 41 cm^3 of concentrated (98%) sulfuric acid **[C]** into 500 cm^3 of distilled water with continuous stirring. Make the solution up to 1 dm^3 with distilled water. **Care:** *concentrated H_2SO_4 is very corrosive.*
[MH] FA 3	25 cm^3	0.2 mol dm^{-3} diammonium iron(II) sulfate(VI) in 0.5 mol dm^{-3} sulfuric acid	Dissolve 78.4 g of $(NH_4)_2SO_4 \cdot FeSO_4 \cdot 6H_2O$ **[MH]** in 1 dm^3 of 0.5 mol dm^{-3} sulfuric acid **[MH]**. Provide in a stoppered container.
hydrogen peroxide	25 cm^3	1 mol dm^{-3} (12 vol) hydrogen peroxide	Dilute 115 cm^3 of '100 vol' H_2O_2 **[C]** to 1 dm^3.

label		per candidate	identity	notes
	dilute hydrochloric acid	10 cm^3	2.0 mol dm^{-3} HCl	See preparation instructions in the current syllabus. If necessary, each of these reagents can be provided as a communal supply for groups of up to 6 candidates. Invigilators must be alert to the risk of contamination and the opportunity for malpractice when using a communal supply.
[C]	dilute nitric acid	10 cm^3	2.0 mol dm^{-3} HNO_3	
[MH]	dilute sulfuric acid	10 cm^3	1.0 mol dm^{-3} H_2SO_4	
[C] [MH] [N]	aqueous ammonia	10 cm^3	2.0 mol dm^{-3} NH_3	
[C]	aqueous sodium hydroxide	10 cm^3	2.0 mol dm^{-3} NaOH	
[N]	aqueous silver nitrate	10 cm^3	0.05 mol dm^{-3} silver nitrate	
	aqueous barium chloride or aqueous barium nitrate	10 cm^3	0.1 mol dm^{-3} barium chloride or 0.1 mol dm^{-3} barium nitrate	
[MH]	1.0 mol dm^{-3} sodium carbonate	10 cm^3	1.0 mol dm^{-3} sodium carbonate	
[MH]	limewater	10 cm^3	saturated aqueous calcium hydroxide, $Ca(OH)_2$	

- An excess of at least 10% of each material must be prepared to cover accidental loss.
- All solutions must be thoroughly mixed.
- If you are unable to source any of these chemicals, you must contact Cambridge International as far as possible in advance of the exam for advice.
- **Materials must be labelled only as specified in the 'label' column. The identities of chemicals labelled with letter codes, e.g. FA 1, may be different from their descriptions in the question paper. Candidates must use the descriptions given in the question paper.**

[Turn over

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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.

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) .....