



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
International General Certificate of Secondary Education

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**CHEMISTRY**

0620/51

Paper 5 Practical Test

October/November 2012

CONFIDENTIAL INSTRUCTIONS

**Great care should be taken to ensure that any confidential information given does not reach the candidates either directly or indirectly.**

**READ THESE INSTRUCTIONS FIRST**

The teacher responsible for preparing the examination is **not** allowed to consult the question paper before the examination. Teachers should, as part of the preparation of the examination requirements, carry out any tests indicated on page 2 in order to satisfy themselves that the supplied materials are satisfactory.

The standard Report Form to be included with the scripts is given on pages 7 and 8. Please detach and enclose it with the scripts. If scripts are despatched in more than one envelope, it is essential that a copy of the Supervisor's Results and of the Report Form are sent inside **each** envelope.

More material may be issued if required, without penalty, but this should not be necessary. Safety spectacles may be provided if considered necessary.

Supervisors are advised to remind candidates that all substances in the examination should be treated with caution. Please also see under 'General Apparatus' on the use of pipette fillers and safety goggles.

In accordance with COSHH (Control of Substances Hazardous to Health) Regulations, operative in the UK, a hazard appraisal of the examination has been carried out.

Attention is drawn, in particular, to certain materials used in the examination. The following codes are used where relevant.

**C** = corrosive substance

**F** = highly flammable substance

**H** = harmful or irritating substance

**O** = oxidising substance

**N** = harmful to the environment

**T** = toxic substance

Hazard data sheets should be available from your suppliers.

If you have any queries regarding these Instructions, please contact CIE

by e-mail: [International@cie.org.uk](mailto:International@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 **5** printed pages and **3** blank pages.



\* 1 9 4 3 0 1 0 2 1 8 \*

**For Question 1**

*Each candidate will require*

- (a) three 10 cm<sup>3</sup> measuring cylinders
- (b) one 50 cm<sup>3</sup> burette
- (c) two boiling tubes
- [H][O] (d) 100 cm<sup>3</sup> of aqueous potassium peroxodisulfate, K<sub>2</sub>S<sub>2</sub>O<sub>8</sub>, of concentration 0.02 mol / dm<sup>3</sup>, (5.4 g / dm<sup>3</sup>), labelled **solution L**
- (e) 50 cm<sup>3</sup> of aqueous potassium iodide, KI, of concentration 0.5 mol / dm<sup>3</sup>, (83 g / dm<sup>3</sup>), labelled **aqueous potassium iodide**.  
This solution should be freshly prepared.
- (f) 50 cm<sup>3</sup> of aqueous sodium thiosulfate, Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub>·5H<sub>2</sub>O, of concentration 0.01 mol / dm<sup>3</sup>, (2.5 g / dm<sup>3</sup>), labelled **aqueous sodium thiosulfate**
- (g) 20 cm<sup>3</sup> of 0.2% starch indicator solution, labelled **starch indicator**
- (h) access to water and distilled water
- (i) stop clock or timer
- (j) a Bunsen burner and matches
- (k) holder for heating the boiling tube
- (l) one stirring thermometer, 0–110 °C

**Note:** Mixing 10 cm<sup>3</sup> of solution L with 5 cm<sup>3</sup> of aqueous potassium iodide, 3 cm<sup>3</sup> of aqueous sodium thiosulfate and 2 cm<sup>3</sup> of starch solution should produce a blue colour within five minutes.

**For Question 2**

*Each candidate will require*

- [H] (a) a stoppered test-tube containing about 0.5 g of zinc sulfate crystals,  $\text{ZnSO}_4 \cdot 7\text{H}_2\text{O}$ , and 0.5 g manganese(IV) oxide,  $\text{MnO}_2$ , intimately mixed and labelled **mixture of M and N**
- (b) one boiling tube and stopper
- (c) distilled water
- (d) splints
- (e) rack of test-tubes
- (f) cork or bung to fit test-tubes
- (g) filtration apparatus and filter paper
- (h) aqueous barium nitrate of suitable concentration to give a positive sulfate test, labelled **barium nitrate solution**
- [N][H] (i) aqueous silver nitrate of suitable concentration to give a positive halide test, labelled **silver nitrate solution**
- [C] (j) aqueous nitric acid of concentration  $1 \text{ mol/dm}^3$ , labelled **nitric acid**
- [C] (k) aqueous sodium hydroxide of concentration  $1 \text{ mol/dm}^3$ , labelled **sodium hydroxide**
- (l) aqueous ammonia of concentration  $1 \text{ mol/dm}^3$ , labelled **aqueous ammonia**
- [H] (m) aqueous hydrochloric acid of concentration  $2 \text{ mol/dm}^3$ , labelled **hydrochloric acid**
- (n) 10 volume aqueous hydrogen peroxide – this is equivalent to  $0.8 \text{ mol/dm}^3$  or a 3% solution, labelled **hydrogen peroxide**
- (o) a Bunsen burner, matches and test-tube holder
- (p) pH indicator papers and chart
- (q) blue litmus papers
- (r) teat pipettes
- (s) spatula

Labels do not need to include concentrations.

**THE SUPERVISOR'S REPORT IS ON PAGES 7 AND 8**

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This form must be completed and returned in the envelope with the scripts.

REPORT ON PRACTICAL CHEMISTRY

NOVEMBER 2012

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1 (a) Supervisor's Results

It is recommended that the Supervisor should be a chemistry teacher.

The Supervisor is asked to carry out the experiments in Questions 1 and 2 and to record the results on a spare copy of the question paper clearly labelled 'Supervisor's Results'. Failure to enclose these results and this report form may lead to candidates being unavoidably penalised.

(b) The candidate numbers of candidates in each session were:

*First session*

*Second session*



- 2 The Supervisor is invited to report details of any difficulties experienced by candidates and candidate numbers. The report should include reference to:
- (a) any general difficulties encountered in making preparations for the examination;
  - (b) difficulties due to faulty apparatus or materials;
  - (c) accidents to apparatus or materials.

Other cases of individual hardship, e.g. illness, temporary disability, should be reported direct to UCLES on the normal *Application for Special Consideration* form.

NAME OF CENTRE .....

CENTRE NUMBER .....

SIGNED .....

*Supervisor*

**DECLARATION (to be signed by the Principal)**

The preparation of this practical examination has been carried out so as to maintain fully the security of the examination.

NAME .....  
(in block capitals)

SIGNED ..... (Principal)