

CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Ordinary Level

CHEMISTRY

5070/3

PAPER 3 Practical Test

CONFIDENTIAL INSTRUCTIONS MAY/JUNE SESSION 2002

1 hour 30 minutes

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

INSTRUCTIONS TO SUPERVISORS

Teachers responsible for the examination are **NOT** allowed to consult the question paper before the day of the examination. However, they are asked to carry out a standard acid/base titration between solutions **P** and **Q** to ensure that the concentrations of the two solutions fall within the range given on page 2.

On the day of the examination, the Supervisor is asked to perform 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', followed by the number of the Centre. This must be enclosed with the scripts. **Unless this is done, candidates may be unavoidably penalised.**

It is essential that candidates accept the descriptions of the solutions as they appear in the question paper.

If candidates from more than one Centre are taking the examination, it is **essential** that a copy of the Supervisor's Results should be sent with the scripts for each Centre.

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

by e-mail: International@ucles.org.uk,

by phone: +44 1223 553554,

by fax: +44 1223 553558,

stating the nature of the query and the syllabus number quoted above.

This question paper consists of 5 printed pages and 3 blank pages.



For Question 1

Each candidate will require the following.

- (a) Approximately 0.05 mol/dm^3 sulphuric acid (H_2SO_4), labelled **P**.
Allow each candidate approximately 150 cm^3 .
- (b) Approximately 0.1 mol/dm^3 sodium hydroxide (approximately 4.0 g/dm^3 NaOH), labelled **Q**.
Allow each candidate approximately 150 cm^3 .
- (c) Methyl Orange or Screened Methyl Orange indicator.

Note: Some variation in the above concentrations is acceptable but it is **essential** that 25.0 cm^3 of **Q** reacts with between 23.0 cm^3 and 27.0 cm^3 of **P** (or 20.0 cm^3 of **Q** reacts with between 18.0 cm^3 and 22.0 cm^3 of **P**).

- (d) Access to
 - (i) approximately 0.2 mol/dm^3 aqueous lead(II) nitrate,
 - (ii) approximately 0.05 mol/dm^3 aqueous silver nitrate,
 - (iii) approximately 0.2 mol/dm^3 aqueous barium nitrate (or approximately 0.2 mol/dm^3 aqueous barium chloride, labelled 'barium nitrate').

The following apparatus should be provided for each candidate:

- a 50 cm^3 burette;
- a 25 cm^3 (or 20 cm^3) pipette;
- a flask or other suitable vessel for titration.

All candidates at a Centre should have pipettes of the same capacity.

For Question 2

Each candidate will require the following.

- (a) A solution containing 100 g chromium(III) potassium sulphate-12 water, $\text{CrK}(\text{SO}_4)_2 \cdot 12\text{H}_2\text{O}$, (chrome alum), dissolved in 1 dm³ of distilled water, labelled **R**. This solution is best prepared by dissolving the chrome alum in hot water and allowing it to cool.

Allow each candidate approximately 30 cm³.

- (b) A solution containing 30 g of potassium dichromate(VI), $\text{K}_2\text{Cr}_2\text{O}_7$, dissolved in 1 dm³ of distilled water, labelled **S**.

Allow each candidate approximately 30 cm³.

- (c) Access to

- (i) approximately 0.2 mol/dm³ aqueous barium nitrate (or approximately 0.2 mol/dm³ aqueous barium chloride, labelled 'barium nitrate'),
- (ii) approximately 1.0 mol/dm³ nitric acid,
- (iii) approximately 1.0 mol/dm³ aqueous sodium hydroxide,
- (iv) approximately '20 volume' hydrogen peroxide (this solution should be freshly prepared),
- (v) approximately 0.5 mol/dm³ sulphuric acid, H_2SO_4 ,
- (vi) the usual reagents needed to test for the gases mentioned in the syllabus, including limewater, approximately 0.1 mol/dm³ aqueous potassium dichromate(VI), $\text{K}_2\text{Cr}_2\text{O}_7$, red and blue litmus paper or Universal Indicator paper, and splints.

- (d) A supply of test-tubes, approximately 125 mm x 16 mm.

- (e) A stirring rod.

In both questions, more material may be issued without penalty, if required, but this should not be necessary.

It is advisable to issue candidates with a pipette filler (or equivalent safety device) and safety goggles.

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 in the normal way.

See also the side lined notes on pages 1, 7 and 8.

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

REPORT ON PRACTICAL CHEMISTRY

ORDINARY LEVEL, JUNE 2002

1 (a) Supervisor's results

Supervisors must use a spare copy of the question paper to report their results for **Q.1 and Q.2** and enclose this copy of the question paper with the candidates' answers. This copy of the question paper should be clearly labelled 'Supervisor's Results'. Failure to enclose these results and this report form may lead to candidates being unavoidably penalised.

If candidates from more than one Centre are taking the examination, it is **essential** that a copy of the 'Supervisor's Results' should be sent with the scripts from **each Centre**. At larger centres where scripts are to be despatched in more than one envelope, it is essential that a copy of the Supervisor's Results is enclosed in each envelope.

(b) The index numbers of the candidates in each session were as follows.

First session

Second session

- 2 The Supervisor is invited to report details of any difficulties experienced by candidates, giving names and index numbers.

This report should include reference to:

- (a) any general difficulties encountered in making preparation;
- (b) difficulties due to faulty apparatus or material;
- (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

SIGNED

Supervisor

CENTRE NUMBER

If the candidates' Centre number is different from the number of the Centre at which the examination was taken, the Supervisor should write **both Centre numbers in the space provided**.

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.

SIGNED

NAME (in block capitals)