

UNIVERSITY OF CAMBRIDGE LOCAL EXAMINATIONS SYNDICATE
Joint Examination for the School Certificate
and General Certificate of Education Ordinary Level

CHEMISTRY

5070/3

PAPER 3 Practical Test

CONFIDENTIAL INSTRUCTIONS

OCTOBER/NOVEMBER SESSION 2001

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 standard acid/base titrations both between solutions **P** and **Q** and between solutions **P** and **R** to ensure that the concentrations of the 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.**

Note: Candidates are NOT allowed to refer to notebooks and textbooks during the examination.

It is essential that candidates accept the descriptions of the solutions as they appear on 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.

These instructions consist of 5 printed pages and 3 blank pages.

For Question 1

Candidates will require the following.

- (a) Approximately 2.0 mol/dm^3 hydrochloric acid, labelled **P**.

Allow each candidate approximately 150 cm^3 .

- (b) Approximately 1.1 mol/dm^3 sodium hydroxide, labelled **Q**.

Allow each candidate approximately 100 cm^3 .

- (c) Approximately 1.1 mol/dm^3 ammonia, labelled **R**.

Allow each candidate approximately 100 cm^3 .

Note: Some variation in the above concentrations is acceptable but it is **essential** that both 50.0 cm^3 of **Q** and 50.0 cm^3 of **R** reacts with between 26.5 cm^3 and 28.5 cm^3 of **P** when titrated separately with an indicator in the normal manner.

P, **Q** and **R** should each be at laboratory temperature at the start of the examination.

It is essential that candidates accept the descriptions of these solutions on the question paper.

The following apparatus should be provided for each candidate;

a 50 cm^3 burette, a 50 cm^3 or 100 cm^3 measuring cylinder, an expanded polystyrene (or other light plastic) cup of at least 150 cm^3 capacity supported in a suitable beaker, a 0°C to 100°C or 0°C to 50°C thermometer graduated at 1°C .

For Question 2

Each candidate will require the following.

- (a) A solution containing 56 g of hydrated nickel(II) sulphate, $\text{NiSO}_4 \cdot 7\text{H}_2\text{O}$, dissolved in 1 dm³ of distilled water, labelled **S**.

Allow each candidate approximately 30 cm³.

- (b) Access to
- (i) approximately 1.0 mol/dm³ aqueous sodium hydroxide, NaOH, labelled as such,
 - (ii) approximately 1.0 mol/dm³ aqueous ammonia, NH₃, labelled as such,
 - (iii) approximately 0.2 mol/dm³ aqueous barium nitrate (or approximately 0.2 mol/dm³ aqueous barium chloride), labelled 'barium nitrate',
 - (iv) approximately 1.0 mol/dm³ nitric acid, HNO₃, labelled as such,
 - (v) aqueous sodium chlorate(I) (sodium hypochlorite), NaClO, (commercial bleach diluted with an equal volume of distilled water should be adequate), labelled 'sodium chlorate(I)',
 - (vi) approximately '20-volume' aqueous hydrogen peroxide, labelled as such, **which should be freshly prepared**,
 - (vii) the usual reagents needed to test for the gases mentioned in the syllabus, including limewater, approximately 0.1 mol/dm³ aqueous potassium dichromate(VI), K₂Cr₂O₇, red and blue litmus paper or Universal Indicator paper, splints.
- (c) A supply of test-tubes, approximately 125 mm x 16 mm.
- (d) A boiling tube, approximately 150 mm x 25 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 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.

BLANK PAGE

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

REPORT ON PRACTICAL CHEMISTRY

SCHOOL CERTIFICATE/ORDINARY LEVEL, NOVEMBER 2001

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 to 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 number of the candidates in each session were:

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 spaces 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)