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.

\[\begin{align*}
C &= \text{corrosive substance} \\
H &= \text{harmful or irritating substance} \\
N &= \text{harmful to the environment} \\
F &= \text{highly flammable substance} \\
O &= \text{oxidising substance} \\
T &= \text{toxic substance}
\end{align*}\]

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, 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.
For Question 1

Each candidate will require

(a) one 50 cm$^3$ measuring cylinder

(b) one 50 cm$^3$ burette

(c) one or more 250 cm$^3$ conical flasks

(d) 100 cm$^3$ of aqueous potassium manganate(VII), KMnO$_4$, of concentration 3.2 g/dm$^3$, labelled solution A

(e) 100 cm$^3$ of aqueous potassium manganate(VII), KMnO$_4$, of concentration 6.4 g/dm$^3$, labelled solution B

(f) 100 cm$^3$ of aqueous hydrogen peroxide, H$_2$O$_2$. This solution should be freshly made, i.e. the day before, and be of concentration 35 cm$^3$ of 20 volume hydrogen peroxide in 1 dm$^3$ of 0.5 mol/dm$^3$ sulfuric acid, labelled solution C. (20 volume hydrogen peroxide is equivalent to 6 % hydrogen peroxide or 1.667 M)

(g) one spatula of manganese(IV) oxide in a test-tube, labelled manganese oxide

(h) access to water and distilled water

(i) one 10 cm$^3$ measuring cylinder

(j) a white tile

(k) a Bunsen burner and matches

(l) splints

(m) a spatula

(n) test-tube

25 cm$^3$ of solution C should require approximately 32 cm$^3$ of solution A for the end-point.
For Question 2

Each candidate will require

[F] (a) a stoppered test-tube containing about 10 cm³ of ethanol, labelled liquid M

(b) a stoppered test-tube containing about 10 cm³ of aqueous potassium iodide, labelled liquid N, of concentration 0.1 mol/dm³

[N] (c) two stoppered, dry test-tubes, each containing one crystal of iodine, labelled iodine

The Supervisor should advise candidates not to touch the crystals.

(d) distilled water

(e) splints

(f) a rack of test-tubes

(g) cork or bung to fit test-tubes

(h) two dry watch glasses

(i) aqueous copper sulfate of concentration 0.1 mol/dm³

[N] (j) aqueous silver nitrate of suitable concentration to give a positive halide test

[C] (k) aqueous nitric acid of concentration 1 mol/dm³

[N][F] (l) about 1 cm³ of cyclohexane, labelled liquid T, in a stoppered test-tube

(m) a 10 cm³ measuring cylinder

(n) a Bunsen burner and matches

(o) teat pipettes

Labels do not need to include concentrations.
THE SUPERVISOR’S REPORT IS ON PAGES 7 AND 8
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THE SUPERVISOR’S REPORT IS ON PAGES 7 AND 8
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:

<table>
<thead>
<tr>
<th>First session</th>
<th>Second session</th>
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<tbody>
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2 The Supervisor is invited to report details of any difficulties experienced by candidates giving names 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)