edexcel

International Advanced Level in Chemistry
Requirements for practical examination

Centres offering the International Advanced Level in Chemistry now have the choice of offering either unit 6 or unit 7. The first examination in unit 7 is January 2017. Centres that choose to offer unit 7 must be able to fulfill the requirements outlined in this document.

This document outlines what centres need to do to successfully plan and carry out the practical examination.

- It is the responsibility of the centre to carry out a full risk assessment before any practical examination takes place.
- The detailed requirements for the practical examination will be specified in the **IAL Chemistry Practical Examination Confidential Instructions document**, which will be sent to centres well in advance of the date of the examination.
- Centres are required to supply their own materials, including preparing their own solutions, for use in the practical examination. Therefore, an area of complete security where materials can be prepared and stored is essential.
- It is assumed that candidates have access to the normal range of chemicals and apparatus used for the International Advanced Level Chemistry course.

It should be noted that not all of the materials listed below will be needed in any one practical examination.

Laboratories

To conduct the practical examination, centres must have a suitably equipped laboratory:

- the laboratory temperature must be maintained at a comfortable level. The levels of lighting and ventilation should be suitable for the practical examination
- laboratories must have adequate bench space for each candidate and must be equipped with running water, electric lighting, gas supply and fume cupboards. An adequate supply of distilled or deionised water is essential
- candidates must be able to work safely in the laboratory. They must be supplied with safety equipment, including laboratory overalls, eye protection and plastic gloves as appropriate

General bench reagents

- Concentrated sulfuric acid
- Concentrated hydrochloric acid
- Concentrated aqueous ammonia
- Dilute sulfuric acid; concentration approximately 1.0 mol dm-3
- Dilute hydrochloric acid; concentration approximately 2.0 mol dm-3
- Dilute nitric acid; concentration approximately 2.0 mol dm-3
- Dilute sodium hydroxide; concentration approximately 1.0 mol dm-3
- Dilute aqueous ammonia; concentration approximately 2.0 mol dm-3
- Aqueous silver nitrate; concentration approximately 0.05 mol dm-3
- Aqueous barium chloride; concentration approximately 0.20 mol dm-3
- Distilled or deionised water

- Universal indicator solution

Other reagents

- Bromine water
- Sodium chlorate(I)
- Iodine
- Sodium carbonate
- Sodium hydrogencarbonate
- Limewater
- Hydrogen peroxide
- Potassium dichromate(VI)
- Potassium manganate(VII)
- 2,4-dinitrophenylhydrazine
- Phosphorus(V) chloride
- Sodium
- Zinc
- Iron filings
- Starch

Volumetric reagents

- Potassium manganate(VII)
- Sodium thiosulfate
- Iron(II) sulfate
- Iron(II) ammonium sulfate
- Ethanedioic acid
- Succinic acid
- Sulfamic acid
- Potassium iodate

Inorganic compounds

- Sodium and potassium chloride, bromide, iodide, carbonate, sulfate
- Magnesium and calcium carbonate
- Magnesium sulfate
- Ammonium chloride, ammonium sulfate
- Sodium nitrate, potassium nitrate
- Chromium(III), manganese(II), iron(II), nickel(II), copper(II) and zinc(II) sulfates
- Iron(III) chloride.

Organic compounds

- Alkanes: hexane
- Alkenes: cyclohexene
- Alcohols: ethanol, propan-1-ol, propan-2-ol, 2-methylpropan-2-ol, butan-1-ol
- Carboxylic acids: ethanoic, propanoic, stearic, palmitic acid
- Carbonyl compounds: propanal, propanone, butanone
- Halogenoalkanes: 2-bromobutane, 1-iodobutane
- Esters: ethyl ethanoate, methyl propanoate, phenyl benzoate

Chemicals should be in stoppered containers labelled with the name, but not necessarily the concentration, of the chemical. The appropriate hazard warning should be attached to the chemical container.

Laboratory equipment

- A supply of clean test tubes and boiling tubes in a test-tube rack
- Stoppers for test tubes and boiling tubes
- Test-tube and boiling-tube holders
- Watch glass
- Small evaporating basin
- 10 cm^3 and 25 cm^3 or 50 cm3 measuring cylinders
- 100 cm3 and 250 cm^3 beakers
- Tongs
- Spatula
- Mortar and pestle
- Glass stirring rod
- Dropping pipettes
- Bunsen burner
- Heat-proof mat
- Tripod and gauze
- Wooden splints

Volumetric apparatus

- 50.0 cm^3 burette with stand, white tile and small funnel for filling burette
- 25.0 cm^3 pipette with safety filler
- 250 cm^3 volumetric flask with stopper
- 250 cm^3 conical flasks
- Wash bottle

Other equipment

- Plastic cup for enthalpy experiments
- Beaker to hold plastic cup for enthalpy experiments
- 0–50°C and 0–100°C, or similar range, thermometers
- Timer
- pH meter and electrodes
- Capillary tubes
- Ignition tube
- Stand and clamp
- Laboratory overall
- Safety goggles
- Plastic gloves
- Access to balance weighing to at least 0.01 g