

## Some further guidance on the specification content

*Please note that the material which appears in italics will only be tested on 4335 Chemistry and not on 4437 Double Award Science (Chemistry)*

### Calculations

Candidates will be expected to perform a range of calculations as part of the specification. These will include:

- finding empirical and molecular formulae from experimental data
- *calculating percentage purity and percentage yield*
- mass/mass and mass/volume calculations i.e. calculating the mass of solid or volume of gas in a chemical equation, given data about the mass or volume of another reactant
- using Avogadro's Law to equate the ratio of the number of moles and the volumes of reacting gases
- *standard acid / alkali titrations*
- *conversion of  $\text{g dm}^{-3}$  to  $\text{mol dm}^{-3}$  for solutions*
- *electrolysis calculations involving the expression  $Q = It$  and Faraday constant*
- *bond energy calculations*

### "The simple physical and chemical properties of compounds of Group 1 and Group 2 elements"

Candidates will be expected to know the following information:

- the solubility of the hydroxides, halides, sulphates, nitrates and carbonates of the elements of Group 1
- Group 1 oxides react with water to form solutions containing hydroxide ions
- Group 1 hydroxides dissolve in water to form alkaline solutions
- *the solubility of the hydroxides, sulphates, nitrates and carbonates of the elements of Group 2*
- *Group 2 oxides react with water to form hydroxides*
- *Group 2 hydroxides are slightly soluble in water, forming alkaline solutions*
- *the thermal decomposition of carbonates of Group 2 elements*

### "The simple physical and chemical properties of copper(II) compounds"

Candidates will be expected to know the following information:

- the colour *and solubility* of copper(II) oxide, hydroxide, chloride, sulphate, nitrate and carbonate
- *the thermal decomposition of copper(II) carbonate and nitrate*
- the reduction of copper(II) oxide to copper

### "Physical properties and simple chemistry of ammonia and its compounds"

Candidates will be expected to know the following information:

- the solubility of ammonia in water; and that the solution formed is alkaline
- a simple test for ammonia (using damp litmus)
- that ammonia is colourless, less dense than air and has a pungent odour
- the reaction of ammonium ions with an alkali, such as sodium hydroxide, to produce ammonia
- ammonium salts are soluble