

Task 3 - Checklist for being A Level-ready (Chemistry)

You are expected to know/understand/be able to work out using the periodic table:

Electron configuration for the first 20 elements

Naming compounds from formulae and vice versa

Bonding and structure

Three main types – how the bonding occurs and properties of the structures

- ionic
- covalent
- metallic

Dot and cross diagrams for covalent molecules and ionic compounds to include:

- sodium chloride, magnesium oxide, sodium oxide, magnesium chloride
- chlorine (Cl_2), oxygen (O_2), nitrogen (N_2), ammonia (NH_3), carbon dioxide, methane (CH_4), water, hydrogen chloride (HCl)

Writing formulae for all of the above plus compounds with:

- ammonium ions (NH_4^+)
- carbonate ions (CO_3^{2-})
- halide ions (chloride, Cl^- ; bromide, Br^- and iodide, I^-)
- hydroxide ions (OH^-)
- nitrate ions (NO_3^-)
- sulfate ions (SO_4^{2-})

Balancing equations for

- neutralisation
- metals with acids
- alkali metals with water
- redox (displacement of halogens and metals)

Calculations

- relative atomic mass, relative formula mass and empirical formulae
- Percentage yield and atom economy
- Reacting masses and limiting reagent

Energetics

- difference between exothermic and endothermic reactions
- graphs associated with these
- energies in bond making and bond breaking

Organic Chemistry

- differences between alkanes and alkenes
- naming and reactions of alkanes and alkenes
- fractional distillation
- cracking
- characteristics of good fuels
- balancing combustion equations