Solutions

Each answer shows the steps, then the **result**.

2.1

- $2Na + 2H_2O \rightarrow 2NaOH + H_2$

2.2

(a)

- basic

(b)

- (strongly) acidic

3.1 C

- Al_2O_3 is amphoteric

3.2 C

- PCl_5 hydrolyses to an acidic solution and HCl fumes

3.3

(a)

- $SO_3 + H_2O \rightarrow H_2SO_4$; pH 0–1

(b)

- amphoteric = reacts with both acids and bases; $Al_2O_3 + 6HCl \rightarrow 2AlCl_3 + 3H_2O$

3.4

- NaCl is ionic, so it just dissolves to give ions and a neutral solution; $SiCl_4$ is covalent and is hydrolysed by water, releasing HCl which makes the solution acidic