Reactivity trends

Specification reference	Checklist questions	
3.1.2 a	Can you describe the outer shell s^2 electron configuration and the loss of these electrons in redox reactions to form 2+ ions?	☐
3.1.2 b i	Can you describe the relative reactivities of the Group 2 elements Mg → Ba shown by their redox reactions with oxygen?	☐
3.1.2 b ii	Can you describe the relative reactivities of the Group 2 elements Mg → Ba shown by their redox reactions with water?	☐
3.1.2 b iii	Can you describe the relative reactivities of the Group 2 elements Mg → Ba shown by their redox reactions with dilute acids?	☐
3.1.2 c	Can you explain the trend in reactivity in terms of the first and second ionisation energies of Group 2 elements down the group?	☐
3.1.2 d	Can you describe the action of water on Group 2 oxides and the approximate pH of any resulting solutions, including the trend of increasing alkalinity?	☐
3.1.2 e i	Can you describe uses of some Group 2 compounds as bases, including equations, for example (but not limited to) $Ca(OH)_2$ in agriculture to neutralise acid soils?	☐
3.1.2 e ii	Can you describe uses of some Group 2 compounds as bases, including equations, for example (but not limited to) $Mg(OH)_2$ and $CaCO_3$ as 'antacids' in treating indigestion?	☐
3.1.3 a	Can you explain the existence of halogens as diatomic molecules and explanation of the trend in the boiling points of Cl_2, Br_2 and I_2, in terms of induced dipole–dipole interactions (London forces)?	☐
3.1.3 b	Can you describe the outer shell s^2p^5 electron configuration and the gaining of one electron in many redox reactions to form 1– ions?	☐

8 Reactivity trends Checklist

Specification reference	Checklist questions	
3.1.3 c	Can you explain the trend in reactivity of the halogens Cl_2, Br_2 and I_2, illustrated by reaction with other halide ions?	☐
3.1.3 d	Can you explain the trend in reactivity from the decreasing ease of forming 1– ions, in terms of attraction, atomic radius and electron shielding?	☐
3.1.3 e i	Can you explain the term *disproportionation* as oxidation and reduction of the same element, illustrated by the reaction of chlorine with water as used in water purification?	☐
3.1.3 e ii	Can you explain the term *disproportionation* as oxidation and reduction of the same element, illustrated by the reaction of chlorine with cold, dilute aqueous sodium hydroxide, as used to form bleach?	☐
3.1.3 e iii	Can you explain the term *disproportionation* as oxidation and reduction of the same element, illustrated by analogous reactions?	☐
3.1.3 f	Can you list and describe the benefits of chlorine use in water treatment contrasted with associated risks?	☐
3.1.3 g	Can you describe the precipitation reactions, including ionic equations, of the aqueous anions Cl^-, Br^- and I^- with aqueous silver ions, followed by aqueous ammonia, and their use as a test for different halide ions?	☐
3.1.4 a	Can you analyse ions on a test-tube scale?	☐
3.1.4 a i	Can you list and describe the processes and techniques needed to identify the following anions in an unknown compound? • CO_3^{2-}, by reaction with $H^+(aq)$ forming $CO_2(g)$ • SO_4^{2-} , by precipitation with $Ba^{2+}(aq)$ forming $CO_2(g)$ • Cl^-, Br^-, I^-	☐

8 Reactivity trends Checklist

Specification reference	Checklist questions	
3.1.4 a ii	Can you list and describe the processes and techniques needed to identify the following cations in an unknown compound? • NH_4^+, by reaction with warm NaOH(aq) forming NH_3	☐