

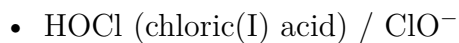
Solutions

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

2.1



2.2



3.1 C

- Chlorine is both oxidised and reduced — disproportionation

3.2 C

- Chlorine in ClO^- is +1

3.3

(a)



(b)

- Cl in $\text{NaCl} = -1$; Cl in $\text{NaClO}_3 = +5$; chlorine starts at 0 and is both reduced (to -1) and oxidised (to $+5$)

3.4

- chlorine reacts with water: $\text{Cl}_2 + \text{H}_2\text{O} \rightleftharpoons \text{HOCl} + \text{HCl}$; the HOCl/ClO^- kills bacteria, making the water safe