

2024 Higher Chemistry Paper 1 - Q5

Section: Chemical Changes and Structure

Topic: Oxidising and Reducing Agents

Question summary (Q5):

In the reaction between potassium sulfite and iodine dissolved in potassium iodide, the species most likely to act as the oxidising agent is:

A $\text{I}^{-}(\text{aq})$ B $\text{I}_2(\text{aq})$ C $\text{SO}_3^{2-}(\text{aq})$ D $\text{SO}_4^{2-}(\text{aq})$

Worked Solution:

- Oxidising agents are species that cause oxidation by gaining electrons (they are reduced).
- In this redox system:
 - Sulfite (SO_3^{2-}) is oxidised to sulfate (SO_4^{2-}).
 - Iodine (I_2) is reduced to iodide (I^{-}).
- Therefore, iodine (I_2) acts as the oxidising agent.

Final Answer: B — $\text{I}_2(\text{aq})$

Revision Tips:

- Oxidising agent = species reduced (gains electrons).
- Reducing agent = species oxidised (loses electrons).
- Sulfite \rightarrow sulfate = oxidation.
- Iodine \rightarrow iodide = reduction.
- Always track electron transfer to identify oxidising and reducing agents.