REDOX (B)

1 Identify the oxidising agent and reducing agent in this reaction: $F_2 + 2KBr \rightarrow 2KF + Br_2$

oxidising agent = **F_2** reducing agent = **KBr (or Br^- in KBr)**

2 State the oxidation state of the sulfur in the following species.

species	H_2S	S_8	SO_3^{2-}	H_2SO_4	SO_2	SF_6	$NaHSO_3$
oxidation state of S	**–2**	**0**	**+4**	**+6**	**+4**	**+6**	**+4**

3 Write a half equation for each of the following conversions.

a $Br^- \rightarrow Br_2$ **$2Br^- \rightarrow Br_2 + 2e^-$**

b $VO_2^+ \rightarrow VO^{2+}$ **$VO_2^+ + e^- + 2H^+ \rightarrow VO^{2+} + H_2O$**

c $Cr_2O_7^{2-} \rightarrow Cr^{3+}$ **$Cr_2O_7^{2-} + 6e^- + 14H^+ \rightarrow 2Cr^{3+} + 7H_2O$**

4 Combine these pairs of half equations to make a redox equation.

a $Zn \rightarrow Zn^{2+} + 2e^-$ and $Fe^{3+} + e^- \rightarrow Fe^{2+}$

$Zn + 2Fe^{3+} \rightarrow Zn^{2+} + 2Fe^{2+}$

b $Fe^{2+} \rightarrow Fe^{3+} + e^-$ and $MnO_4^- + 8H^+ + 5e^- \rightarrow Mn^{2+} + 4H_2O$

$MnO_4^- + 8H^+ + 5Fe^{2+} \rightarrow Mn^{2+} + 4H_2O + 5Fe^{3+}$