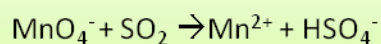
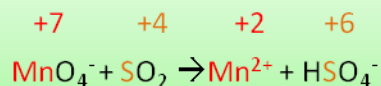


# REDOX REACTIONS

Balancing Redox Reaction in Acidic Medium



Step 1: Write the Oxidation Numbers to identify oxidation and reduction half reactions

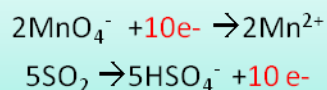


Step 2: Write oxidation and reduction half reactions separately. Balance atoms undergoing oxidation and reduction and show the electrons involved in the two half equations.

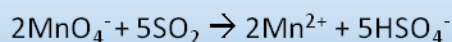
Reduction (i):  $\text{MnO}_4^- + 5\text{e}^- \rightarrow \text{Mn}^{2+}$  (Mn undergoes a change in Oxidation Number by 5, Gain of 5 Electrons)

Oxidation (ii):  $\text{SO}_2 \rightarrow \text{HSO}_4^- + 2\text{e}^-$  (S Oxidation Number inc by 2 for 1 atom, Loss of 2 electrons)

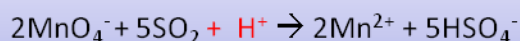
Step 3: Equate the gain and loss of  $\text{e}^-$  (In this case, Multiply eq (i) by 2 and (ii) by 5 and add)



Step 4: Add half equations (electrons cancel out)



Step 5: Balance charges (adding  $\text{H}^+$  as this is acidic medium)



Step 6: Add water to balance Oxygen (Hydrogen gets balanced automatically)

