SUBJECT – CHEMISTRY
IBDP YEAR II
ASSIGNMENT 1

Test yourself

6 State whether each of the following half-equations involves oxidation or reduction:

a $Cl_2 + 2e^- \rightarrow 2Cl^-$

b $Mn^{3+} + e^- \rightarrow Mn^{2+}$

c $Cu^+ \rightarrow Cu^{2+} + e^-$

d $I_2 + 6H_2O \rightarrow 2IO_3^- + 12H^+ + 10e^-$

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

7 State which of the following reactions are redox reactions. For each redox reaction identify the element that has been oxidised and the element that has been reduced.

a $Cu^{2+}(aq) + 2OH^-(aq) \rightarrow Cu(OH)_2(s)$

b $2ZnS + 3O_2 \rightarrow 2ZnO + SO_2$

c $2Na + 2H_2O \rightarrow 2NaOH + H_2$

d $SO_3 + H_2O \rightarrow H_2SO_4$

e $Na_2CO_3 + 2HCl \rightarrow 2NaCl + H_2O + CO_2$

f $2FeSO_4 + H_2SO_4 + H_2O_2 \rightarrow Fe_2(SO_4)_3 + 2H_2O$

g $3HgSO_4 \rightarrow Hg_2SO_4 + Hg + 2SO_2 + 2O_2$

h $2I^- + H^+ + HOCl \rightarrow I_2 + H_2O + Cl^-$

8 In each of the following redox reactions, identify the oxidising agent and the reducing agent:

a $Zn + CuSO_4 \rightarrow ZnSO_4 + Cu$

b $Cl_2 + 2Br^- \rightarrow 2Cl^- + Br_2$

c $I_2O_5 + 5CO \rightarrow 5CO_2 + I_2$

d $S + 6HNO_3 \rightarrow 2H_2O + H_2SO_4 + 6NO_2$

e $2Na_2S_2O_3 + I_2 \rightarrow Na_2S_4O_6 + 2NaI$

f $2KMnO_4 + 5Na_2C_2O_4 + 8H_2SO_4 \rightarrow 2MnSO_4 + 10CO_2 + K_2SO_4 + 5Na_2SO_4 + 8H_2O$

g $6FeSO_4 + K_2Cr_2O_7 + 7H_2SO_4 \rightarrow 3Fe_2(SO_4)_3 + K_2SO_4 + Cr_2(SO_4)_3 + 7H_2O$