MEGA LECTURE

Topic 13 Exercise 1 – oxidation and reduction

1. Deduce the oxidation numbers of the following atoms:

a)	Mn in MnO_4^-
b)	O in H_2O_2
c)	Cr in $Cr_2O_7^{2-}$
d)	Cr in CrO_4^{2-}
e)	V in VO_2^+
f)	V in VO^{2+}

2. Derive balanced half-equations for the following reduction processes:

a) MnO_4^- to Mn^{2+}
b) $Cr_2O_7^{2-}$ to Cr^{3+}
c) Zn^{2+} to Zn
d) Fe^{3+} to Fe^{2+}
e) H_2O_2 to H_2O

3. Derive balanced half equations for the following oxidation processes:

a) Zn to Zn^{2+}
b) Fe^{2+} to Fe^{3+}
c) H_2O_2 to O_2
d) SO_3^{2-} to SO_4^{2-}

4. Write balanced equations for the following redox reactions:

a) MnO_4^- with Fe^{2+}
b) $Cr_2O_7^{2-}$ with H_2O_2
c) VO_2^+ to V^{2+} with Zn
d) VO_2^+ to VO^{2+} with SO_3^{2-}

5. Write half-equations to show the following processes in excess alkali. State in each case whether oxidation or reduction is taking place.

a) O_2 to OH^-
b) Cr^{3+} to CrO_4^{2-}
c) H_2O_2 to OH^-
d) MnO_4^- to MnO_2