Page 163 # 66,68,70,71,72,73

#66)

(a) Neither. The oxidation states do not change.

(b) Neither. The oxidation states do not change.

(c) Reduction. The oxidation state of carbon decreases form +2 to -4.

#68)

(a) $CH_4 + 2NO_2 \rightarrow N_2 + CO_2 + 2H_2O$

(b) $Ca(ClO)_2 + 4HCl \rightarrow CaCl_2 + 2H_2O + 2Cl_2$

(c) $SeO_3^{2-} + 4I^- + 6H^+ \rightarrow Se + 2I_2 + 3H_2O$

(d) $3Fe^{2+} + NO_3^- + 4H^+ \rightarrow 3Fe^{3+} + 2H_2O + NO$

(e) $3Zn + Cr2O_7^{2-} + 14H^+ \rightarrow 3Zn^{2+} + 2Cr^{3+} + 7H_2O$

70)

OXIDIZING AGENT	**REDUCING AGENT**
NO_2	CH_4
$Ca(ClO)_2$	HCl
SeO_3^{2-}	I^-
NO_3^-	Fe^{2+}
$Cr2O_7^{2-}$	Zn

71)

(a) Nothing is reduced

(b) Sulfur is oxidized, but nothing is reduced.

72)

(a) Nothing is oxidized.

(b) Nothing is reduced.

73)

(a) $Zn(s) + 2H^+(aq) \rightarrow Zn^{2+}(aq) + H_2(g)$

(b) $Cu(s) + Zn^{2+}(aq) \rightarrow$ No Reaction

(c) $Fe(s) + 2Ag^+(aq) \rightarrow Fe^+(aq) + 2Ag(s)$

(d) $Au(s) + H^+(aq) \rightarrow$ No Reaction