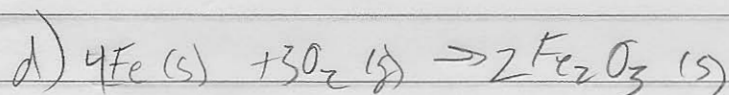
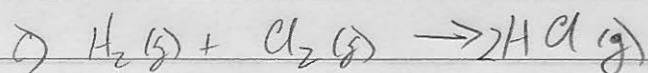
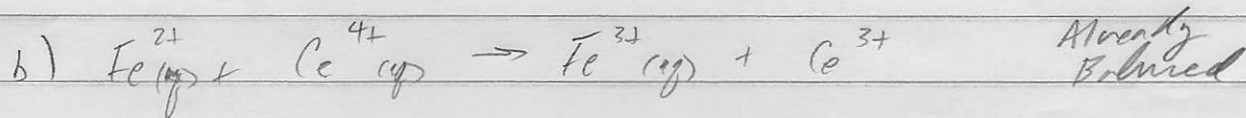
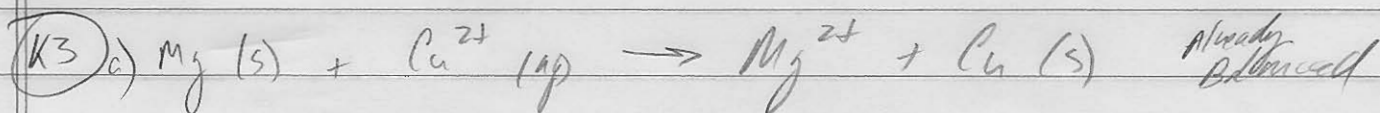
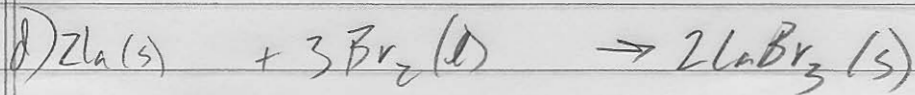
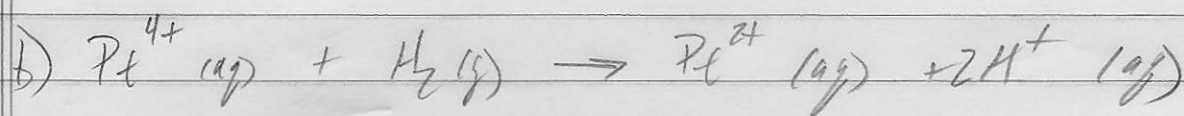
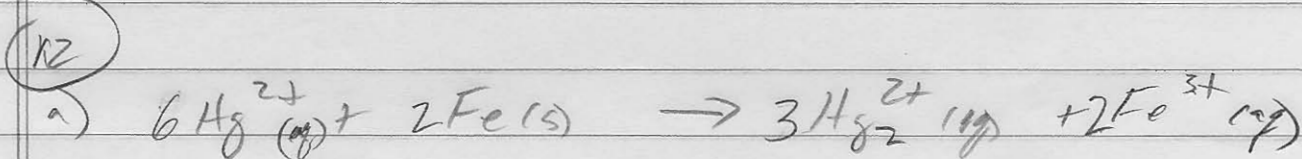
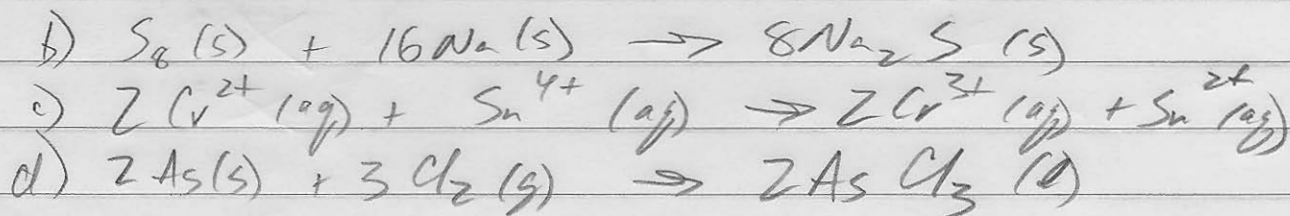
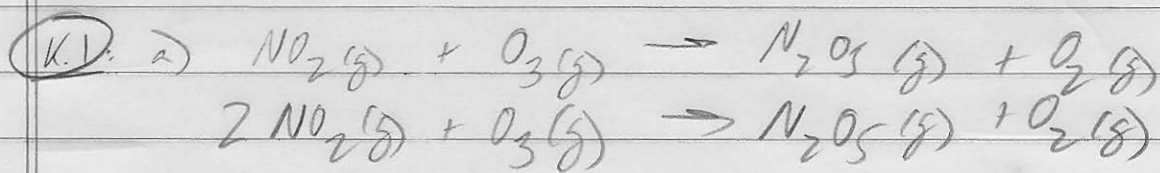


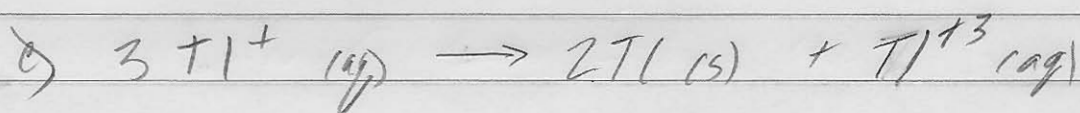
Atkins Fundamentals Section K



- (k4)
- a) S: +4
 - b) Se: +6
 - c) N: -2
 - d) N: +4
 - e) Br: -1
 - f) Xe: +2

(k9) a) Methanol is oxidized. The carbon atom's oxidation number changes from +2 in methanol to +4 in formic acid. Oxygen is reduced. The oxidation number changes from zero to -2.

b) Sulfur is oxidized. Its oxidation number changes from -2 to zero. Molybdenum is reduced. Its oxidation number is reduced from +5 to +4.

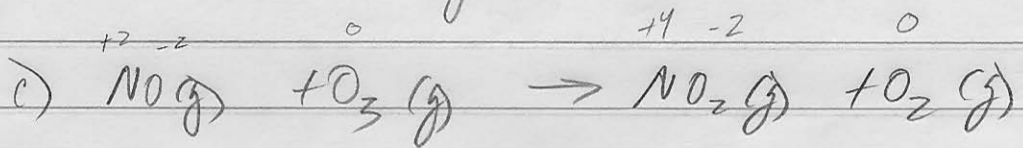


Tl is oxidized and reduced. 2 Tl atoms are created when 2 Tl⁺ ions are reduced by one Tl⁺ ion going to Tl⁺³.

K10

a) I^- is oxidized to elemental iodine
Chlorine is reduced.

b) Chlorine is reduced. Oxidation number goes from zero to -1
oxygen is oxidized. Its oxidation number changes from -2 to zero.



Nitrogen is oxidized. Its oxidation number changes from $+2$ to $+4$

K11

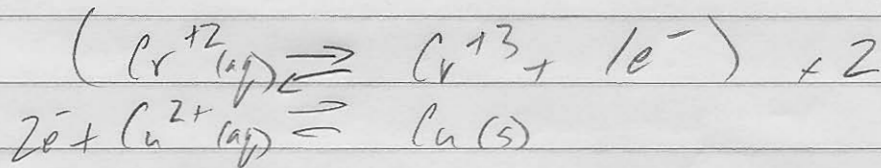
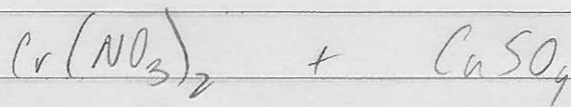
oxidizing agents are capable of accepting electrons (or being reduced)

- a) Cl_2 is a better oxidizing agent
- b) N_2O_5 is a better oxidizing agent. The N in N_2O_5 has an oxidation number of $+5$.

K20

- a) Redox reaction. Reducing agent is Carbon monoxide. Oxidizing agent is I_2O_5 .
- b) Redox reaction. Reducing agent is Disulfur trioxide. Oxidizing agent is Iodine
- c) Precipitation Reaction
- d) Redox Reaction: Oxidizing agent is UF_4
Reducing agent is $Mg(s)$.

K23



b) There are 2 electrons transferred

c) The anions are NO_3^- and SO_4^{2-}

$$5.00 \text{ g Cr}(\text{NO}_3)_2 \times \frac{1 \text{ mole Cr}(\text{NO}_3)_2}{176.0 \text{ g}} = 0.028 \text{ moles Cr}(\text{NO}_3)_2$$

$$0.028 \text{ moles Cr}(\text{NO}_3)_2 \times \frac{2 \text{ moles NO}_3^-}{1 \text{ mole Cr}(\text{NO}_3)_2} = 0.057 \text{ moles NO}_3^-$$

$$\frac{0.057 \text{ moles NO}_3^-}{0.250 \text{ L}} = 0.23 \text{ M NO}_3^-$$

$$6.00 \text{ g CuSO}_4 \times \frac{1 \text{ mole CuSO}_4}{159.62 \text{ g}} \times \frac{1 \text{ mole SO}_4^{2-}}{1 \text{ mole CuSO}_4} = 0.038 \text{ moles SO}_4^{2-}$$

$$\frac{0.038 \text{ moles SO}_4^{2-}}{0.250 \text{ L}} = 0.15 \text{ M SO}_4^{2-}$$