CHM151 Q2a 25 Pts Spring 2010 Name: Key

Conversion Factors: $\mu = 10^{-6}$, $m = 10^{-3}$, $c = 10^{-2}$, $k = 10^{3}$.
1 kg = 2.205 pounds, 2.54 cm = 1 in, 12 inches = 1 ft.

SHOW ALL WORK TO RECEIVE CREDIT

1. (5 Pts) A certain medication calls for a dosage of 1.0 μL for each kilogram of body weight. If a patient weighs 158 pounds, how many μL of medication should his dosage contain?

$$\frac{158\ \cancel{lbs}}{1} \left| \frac{1\ \cancel{kg}}{2.205\ \cancel{lbs}} \right| \frac{1.0\ \mu L}{1\ \cancel{kg}} = 71.7 = 72\ \mu L$$

2. (9 Pts) Complete the following table.

Element or ION	number of protons	number of electrons	number of neutrons
$^{15}N^{3-}$	7	10	8
^{55}Fe	26	26	29
^{37}Cl	17	17	20

3. (3 Pts) State which element Mg or S is larger in size (volume) and then explain why.

Mg has a larger diameter. Each element has three "layers" of e⁻s (3rd period), but Mg only has 12 protons holding the electrons, whereas S has 16 protons holding the electrons.

5. (8 Pts)

a. molecular equation: $Na_3PO_4(aq) + CrCl_3(aq) \rightarrow 3NaCl(aq) + CrPO_4(s)$

total ionic equation: $3Na^+ + PO_4^{3-} + Cr^{3+} + 3Cl^- \rightarrow 3Na^+ + 3Cl^- + CrPO_4(s)$

net ionic equation: $PO_4^{3-} + Cr^{3+} \rightarrow CrPO_4(s)$

b. molecular equation $HF(aq) + LiOH(aq) \rightarrow H_2O(l) + LiF(aq)$

total ionic equation: $HF(aq) + Li^+ + OH^- \rightarrow H_2O(l) + Li^+ + F^-$

weak acid →

net ionic equation: $HF(aq) + OH^- \rightarrow H_2O(l) + F^-$

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1. (5 Pts) A certain medication calls for a dosage of 2.0 μL for each kilogram of body weight. If a patient weighs 143 pounds, how many μL of medication should her dosage contain?

$$\frac{143\ \text{lbs}}{1} \left| \frac{1\ \text{kg}}{2.205\ \text{lbs}} \right| \frac{2.0\ \mu\text{L}}{\text{kg}} = 129.7 = 130\ \mu\text{L}$$

2. (9 Pts) Complete the following table.

Element or ION	number of protons	number of neutrons	number of electrons
$^{14}N^{3-}$	7	7	10
^{56}Fe	26	30	26
^{35}Cl	17	18	17

3. (3 Pts) State which element Na or P is larger in size (volume) and then explain why.

Na is larger (same period, but less protons pulling on the e^-'s

5. (8 Pts)

a. molecular equation: $HF(aq) + NaOH(aq) \rightarrow H_2O(l) + NaF(aq)$

total ionic equation: See Quiz 3a

net ionic equation:

b. molecular equation $K_3PO_4(aq) + CrCl_3(aq) \rightarrow 3KCl(aq) + CrPO_4(s)$

total ionic equation:

net ionic equation: