Review STE/ST Lab EXAM **Name** _____

KEY CONCEPTS FROM STE LABS

1. Avogadro Number Lab

- From the positions of $^{12}C^{+}$ and $^{1}H^{+}$ on the mass spectrum you can find out how much heavier $^{12}C^{+}$ is compared to $^{1}H^{+}$.
- Since $^{1}H^{+}$is a proton and since we know the masses of the proton and the electron from Thompson, we can easily calculate the mass of a ^{12}C atom.
- A mole is the number of atoms in 12.000 g of ^{12}C
- 12.000 g/mole ÷ 1.993 X 10^{-23} g/atom= 6.02 X10^{23} atoms/mole

2. Baking Soda Lab $NaHCO_3 + HCl \rightarrow H_2O + CO_2 + NaCl$

- We added more than enough acid to eliminate all of the$NaHCO_3$ (weighed).
- All of the CO_2 escaped.
- But we were stuck with leftover HCl, NaCl and water.
- With heat, we drove off HCl and H_2O
- The blue -> red litmus paper test revealed that acid(HCl) was evaporating.
- Once we get NaCl's mass, we compared it to what stoichiometry predicted based on the moles of $NaHCO_3$ that were weighed.

- **KEY CONCEPTS FROM ST LABS**

1. Electrolysis of Water $2\ H_2O \rightarrow 2\ H_2 + O_2$

- Water can be split with electricity and the help of acid or salt
- When it dissociates, in theory, it should give a 2: 1 ratio of H_2 and O_2 gases to reflect the balanced equation
- But because of competing impurities inthe water, usually less oxygen is produced.

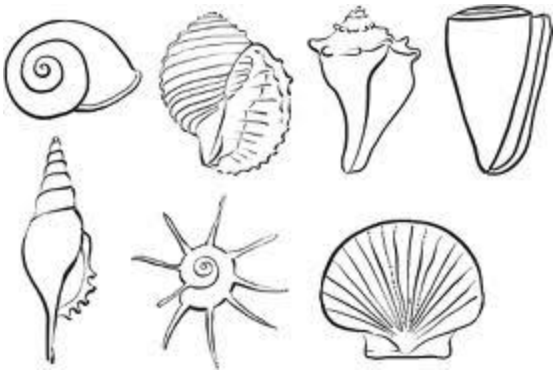
2. Preparing a Solution WDTA for a solid after using m=CV




and PTA for dilution



3. Carbon Cycle Lab



- By blowing into water or any aqueous solution we represented what happens when carbon dioxide from the atmosphere encounters water:
  $H_2O + CO_2 \rightarrow H_2CO_3$
- In the presence of base (high pH) and calcium ions, the ions from the H_2CO_3 react and form calcium carbonate, which is found in shells.
- Both vinegar and H_2CO_3 are acids, so both change the colour of bromothymol blue towards yellow. But since H_2CO_3 is a weaker acid, it only goes to the in-between colour of green.

Other Things You Should Know:

1. Conservation of mass principle, which applies to all physical and chemical changes. Atoms are not destroyed.
2. These types of examples:

   If you are told that all nitrate compounds are soluble, then write a formula for the precipitation reaction involving:

   $AgNO_{3(aq)} + NaCl_{(aq)} \rightarrow$_____+_____

   If you are told that all potassium compounds are soluble, then write a formula for the precipitation reaction involving:

   $K_2CO_{3(aq)} + CaCl_{2(aq)} \rightarrow$_____+_____