CHEM 202 Accelerated General Chemistry I Week 2 – Stoichiometry IV and Solutions MERIT WS 2.1 TA: Alex Wang September 2<sup>nd</sup> 2021 Section AQG





1. You have a solution of table salt in water. What happens to the salt concentration (increases, decreases, or stays the same) as the solution boils? Draw pictures to explain your answer.

- 2. You have a table sugar solution (sucrose, C<sub>12</sub>H<sub>22</sub>O<sub>11</sub>) sitting in an open beaker. After several days, you test the solution and find that it has a concentration 33.3% higher due to evaporation. What percentage of the water must have evaporated from the sugar solution?
  - a. 25.0%
  - b. 33.3%
  - c. 66.7%
  - d. 75.0%
  - e. The concentration of the solution will not change due to evaporation.

- 3. Calculate the concentration of all ions present in each of the following solutions of strong electrolytes.
  - a. 0.100 mole of calcium nitrogen in 100.0 mL of solution.
  - b. 2.5 moles of sodium sulfate in 1.25 L of solution.
  - c. 5.00 grams of ammonium chloride in 500.0 mL of solution.
  - d. 1.00 grams of potassium phosphate in 250.0 mL.

4. A standard solution is prepared for the analysis of fluoxymesterone (C<sub>20</sub>H<sub>29</sub>FO<sub>3</sub>), an anabolic steroid. A stock steroid is first prepared by dissolving 10.0 mg of fluoxymesterone is enough water to give a total volume of 500.0 mL. A 100.0 microliter aliquot (portion) of this solution is diluted to a final volume of 100.0 mL. Calculate the concentration of the final solution in terms of molarity.

5. Suppose 50.00 mL of 0.250 M CoCl<sub>2</sub> solution is added to 25.0 mL of 0.350 M NiCl<sub>2</sub> solution. Calculate the concentration of each of the ions present after mixing. Assume additive volumes.

6. How much silver chloride can be prepared by the reaction of 100.0 mL of 0.20 M silver nitrate with 100.0 mL of 0.15 M of calcium chloride? Calculate the concentration of each ion remaining in solution after precipitation is complete.

7. A 46.2 mL portion of 0.568 M calcium nitrate solution is combined with 80.5 mL of an older calcium nitrate solution having a concentration of 1.396 M. Calculate the concentration of calcium nitrate in the final solution.

8. When 1.0 mole of solid lead (I) nitrate is added to 2.0 moles of aqueous potassium iodide, a yellow participate forms. After the precipitate settles to the bottom, does the solution above the precipitate conduct electricity? Explain. Write the complete ionic equation to help you answer this question.