Solutions Review

You must be familiar with the following term:

Solubility miscible super saturated dilution

Concentration immiscible ionization conductivity

Molarity saturated litmus paper aqueous

Dissociation homogeneous mixture heterogeneous mixture

Solute solvent solution unsaturated

Electrolyte non-electrolyte what influences solubility rate

1. Write the chemical name for the solute and the solvent in each of the following solutions.
2. CaCl2(aq) b) NH3(aq)
3. Give an example of a molecular compound, an ionic compound, a base and an acid.
4. Describe a diagnostic test or a simple procedure that would distinguish between the following.
5. A solution of an ionic compound and a solution of a molecular compound.
6. A solution of an acid and a solution of a base.
7. Write a balanced chemical equation that would represent the dissociation for each of the following pure substances that are placed in water.
8. Strontium hydroxide e) Hydrogen bromide
9. Potassium phosphate f) Magnesium acetate
10. Zinc sulfide g) Iron
11. Calcium carbonate
12. From the substances in question #4 that are soluble, give the concentration of each cation and anion if the original solution has a concentration of 0.1 mol/L.
13. A sodium chloride solution is prepared by dissolving 1.75 g of sodium chloride to make 50.0 mL of solution. What is the molarity of this solution?
14. Symptoms of mercury poisoning begin to appear when the concentration of mercury in the human brain is about 5 ppm. What mass of mercury is present in a brain containing 1.2 L of fluid that has this concentration of mercury?
15. What is the volume of concentrated phosphoric acid solution is needed to prepare 2.00 L of 0.275 mol/L solution for an experiment if the initial concentration is 14.6 mol/L?
16. If water is added to a 10.0 mL sample of 5.85 g/L NaOH(aq) until the volume becomes 3.50 L, find the concentration of the prepared solution.
17. Describe how a person would prepare a 500.0 mL sample solution of 3.0 % hydrochloric acid from a concentrated reagent.
18. A 10.0mL sample of saturated copper II sulfate solution is evaporated to form 2.85 g of crystals. What was the molarity of the solution before evaporation?
19. A solution of sodium hydroxide has a concentration of 0.82 mol/L. What mass of sodium hydroxide you be in a 85.0 mL sample?
20. The following evidence was collected in a qualitative analysis experiment.

|  |  |  |  |
| --- | --- | --- | --- |
| Solution | Conductivity | Litmus test | Addition of Na2CO3(aq) |
| 1 | High | Red to blue | No change |
| 2 | High | No change | Blue precipitate |
| 3 | None | No change | No change |
| 4 | High | Red to blue | White precipitate |

Match the solution number to the following substances: KOH(aq), Ba(OH)2(aq), CoCl2(aq), C6H12O6(aq)

1. Know how to use the significant digits, solubility table, color charts and identify unknown substances.