Name: _____ Date: _____

# SCH3U1 – Solubility and Saturation

*Complete the following:*

1. Explain why water is a polar molecule. 
2. Describe how the dissolving of sugar and sodium chloride is different. 

3. List three ways you can increase the solubility.

4. Show the total ionic and net ionic forms of the following equations. If all species are spectator ions, please indicate that no reaction takes place. Note: you need to make sure the original equation is balanced before proceeding!

   a) $AgNO_3(aq) + KCl(aq) \rightarrow AgCl(s) + KNO_3(aq)$
   b) $Mg(NO_3)_2(aq) + Na_2CO_3(aq) \rightarrow MgCO_3(s) + NaNO_3(aq)$
   c) strontium bromide(aq) + potassium sulfate(aq) → strontium sulfate(s) + potassium bromide(aq)
   d) manganese(II)chloride(aq) + ammonium carbonate(aq) → manganese(II)carbonate(s) + ammonium chloride(aq)
   e) chromium(III)nitrate(aq) + iron(II)sulfate(aq) → chromium(III)sulfate(aq) + iron(II)nitrate(aq)
   f) $K_3PO_4(aq) + Al(NO_3)_3(aq) \rightarrow$
   g) $BeI_2(aq) + Cu_2SO_4(aq) \rightarrow$
   h) $Ni(NO_3)_3(aq) + KBr(aq) \rightarrow$

5. In general, “like dissolves like,” so that polar solvents dissolve ionic solids and polar molecules, and non- polar solvents dissolve non-polar molecules. Alcohols, which have properties of both, tend to dissolve in both types of solvents to a degree. Indicate which solutes the following solvents will dissolve by checking the appropriate columns.

| SOLUTES | SOLVENTS | | |
|---|---|---|---|
| | WATER | CCl4 | Methanol (CH3OH) |
| NaI | | | |
| Br2 | | | |
| Ethanol (C2H5OH) | | | |
| Benzene (C6H6) | | | |
| KClO3 | | | |
| KMnO4 | | | |
| C6H12O6 | | | |
| C3H8 | | | |

6. Classify the following compounds as either an electrolyte or a non-electrolyte by checking the appropriate column.

| **Compound** | **Electrolyte** | **Nonelectrolyte** |
|---|---|---|
| KF | | |
| C12H22O11 | | |
| NaOH | | |
| CH3OH | | |
| MgCl2 | | |
| H2CO3 | | |
| C6H12 | | |