

Chem 343

Name: \_\_\_\_\_

Quiz 1

Section: \_\_\_\_\_

1. **If you start with 0.85 g of crude solid and end up with 0.67 g of pure solid, what is your percent recovery?**
2. **What are the properties of a good recrystallization solvent?**
3. **Why do organic chemists often rinse glassware with an organic solvent, like acetone or an alcohol, after washing with soap and water. Circle all that apply.**
  - 1) Often times water can cause unwanted side-reactions so acetone is used to help “get rid of” any water that may be left from traditional washing.
  - 2) Sometimes the compounds that we work with in an organic lab are not highly soluble in water, so even after scrubbing glassware with soap and water, the glassware may contain a residue. Using an organic solvent (like acetone) will rinse out any remaining nonpolar/slightly polar residues.
  - 3) It keeps the glassware from cracking.
  - 4) It keeps whatever substance you put in that piece of glassware from reacting with the silicon dioxide on the surface of the glass.

4. You need to remove a colored impurity from your unknown sample. Arrange the following steps in the proper order. (1 = first step; 5 = final step)

\_\_\_\_\_ Add activated charcoal

\_\_\_\_\_ Heat the solution with swirling (or stirring)

\_\_\_\_\_ Dissolve the sample in warm → hot recrystallization solvent

\_\_\_\_\_ Gravity filter the solution to remove the charcoal and colored impurity

\_\_\_\_\_ Allow solution to cool somewhat

5. A melting point for a known substance was both high and broad? Why might that be? Circle all that apply.

- 1) The sample was impure or wet.
- 2) The amount of sample in the tube was too large.
- 3) The ramp rate of the Meltemp instrument was too fast (sample heated too quickly).
- 4) The humidity level in the lab was very high.

6. What does it mean if a mixed solvent system such as ethanol/water is suggested for a recrystallization?

- 1) It means you can use either ethanol or water...take your pick.
- 2) It means you should mix a little water in some ethanol to use for dissolving your sample.
- 3) It means that you should boil water and ethanol together before using.
- 4) It means you should dissolve your unknown in a minimal amount of hot ethanol and add drops of hot or cold water until cloud point is reached then allow to cool.