Chemistry
Study Guide Ch. 17

1. Water is a polar molecule. The **O** end of the molecule is slightly negative while the **H** end is slightly positive
2. Illustrate hydrogen bonding between two water molecules.
3. Water has a high surface tension due to the formation of **H Bonding** between water molecules.
4. A surface active agent is better known as a **Surfactant** which **↓** the surface tension of water
5. Water has a **Low** vapor pressure because of hydrogen bonding
6. Water has a **High** specific heat because of hydrogen bonding
7. Water has a **High** heat of vaporization, because of hydrogen bonding.
8. Water has a **High** boiling point, BP, because of hydrogen bonding.
9. Water has a **High** heat of condensation, because of hydrogen bonding.
10. Water has **High** melting point, MP because of hydrogen bonding.

11. As the size, molar mass of number of electrons, of molecules increases the BP is expected to **↑** due to increasing intermolecular attraction.
12. As polarity of molecules increase the BP is expected to **↑** due to increasing intermolecular attraction.
13. For most solids density is **Greater** than in the liquid sate. Water is different. As liquid water turns to a solid it expands and its density **Decreases**. Water is its most dense at **4.0°C**. Study the top of p. 481. Which state, solid or liquid has more empty space? **Solid** How does this explain why liquid water is more dense than solid water, ice?
14. A solution in which water is the solvent is called an **Aqueous Solution** .
15. Sugar is dissolved in water. Sugar is the **Solute**. Water is the **Solvent**
16. Study Figure 17.12. What part of the water molecules point in toward a negative ion? **H** What part of the water molecules point in toward a positive ion? **O**. **Solvation** is the process that occurs when a solute particle becomes surrounded by solvent molecules. Hydration is the name for **Solvation** when water is the solvent. Study Fig. 17.11 Why is the blue color held back by the filter paper? **Blue particles pass through too small.**
17. Most ionic compounds dissolve in water. List two that do not. **$BaSO_4$, $CaCO_3$**
18. **Like** dissolves **Like** indicates that polar tends to dissolve polar , nonpolar tends to dissolve nonpolar, and polar and nonpolar ten not to like each other.
19. Compounds that conduct electricity in **Aqueous** solutions or the **molten** state are called electrolytes. Compounds that do not conduct electricity in aqueous solution or molten are called **nonelectrolytes**
20. Give two examples of nonelectrolytes. **sugar alochol**.
21. Compounds that completely dissociate (break up into ions) or Ionize (form ions) in water produce many ions in solution. These compounds are called **strong electrolytes** Hydrochloric acid, HCl, and table salt, NaCL are examples.
22. Compounds that produce few ions in solution are called **weak electrolytes** Vinegar an aqueous solution an acetic acid, is an example.
23. Crystals that have **H_2O** molecules as part of the crystal structure are called hydrates. The water molecules that are part of the crystal structure are called waters of hydration. How many waters of hydration per CuSO4 are in copper (II) sulfate pentahydrate? **5** What is the formula for this hydrate? **$CuSO_4 5H_2O$**
24. Study Fig. 17.15 Write balanced equation for this reaction.

25. If a hydrate tends to lose water to the atmosphere it is said to **Efflorece**.
26. A substance that removes moister form the air are said to be **Hygroscopic**
27. Hygroscopic substances that are used as drying agents are called **Desicants**
28. **Deliquescent**. compounds remove sufficient water from the air to dissolve completely and form solutions.
29. **Suspesnions** are heterogeneous mixtures from which suspends particles settle out upon standing

30. Study Fig. 17.18. Why is the liquid in the Erlenmeyer flask clear? **p. 490**
31. Smoke and fog are examples of a type of heterogeneous mixture called **colloids** .
32. Study Fig. 17.19. Which two of the three exhibits the Tyndall effect? **colloid suspension**
33. The chaotic motion a pollen grain when viewed under a microscope became known as **Brownian Motion** . Brown could not explain the phenomenon at the time. TI was later explained with the development of kinetic theory.
34. An **Emulsion** is a colloidal dispersion of a liquid in a liquid. What is required to maintain a stable emulsion? **Emulsifying Agent** Give two examples of emulsifying agents.
Soap, Egg yolk in Mayo.