

STUDY SHEET

EXAM 3

1. Define and/or describe: electronegativity, solution, solute, solvent, concentrated, dilute, solubility, miscible, saturated, unsaturated, percent concentration, molarity, molality.
2. Distinguish between:
 - a. Polar and nonpolar covalent bond
 - b. Polar and nonpolar molecule
 - c. Polar and nonpolar compound
 - d. Saturated and unsaturated solutions
 - e. Electrolyte and nonelectrolyte
 - f. Strong electrolyte and weak electrolyte
3. Use estimated differences in electronegativities between bonding atoms to determine whether the bond between them will be ionic or covalent. You will make your estimate on the basis of the relative positions of the elements on the periodic chart.
4. Give the names of the types of inter- and intraparticle attractive forces, the relative strengths of these forces, and the types of particles they bond together.
5. Given two particles, which may be atoms or ions or molecules, give the name of the type of inter- or intraparticle force that would occur between them.
6. Discuss the factors that affect solubility of solutes in liquid solvents.
7. List the factors that affect the rate of dissolving of solutes in liquid solvents.
8. Use a solubility curve to determine whether a given solution is saturated or unsaturated, and how much precipitate might form upon cooling of the solution.
9. Determine whether a given ionic compound is soluble in water.
10. Given any two of the following quantities, calculate the third: amount (mass or volume) of solute, amount (mass or volume) of solvent, concentration in percent.
11. Given any two of the following quantities, calculate the third: volume of solution, molar concentration, moles or mass of solute. Molar mass of solute will be given.
12. Calculate the volume of a solution of known molarity required to prepare a specified volume of solution of specified molarity by dilution.
13. Calculate the molar concentration of a solution prepared by diluting a known volume of a solution of known concentration.
14. Given any two of the following quantities, calculate the third: mass of solute, mass of solvent, molal concentration of the solution. Molar mass of the solute will be given.
15. State the Arrhenius Theory of acids and bases.
16. List the properties of aqueous solutions of acids and bases.
17. Determine whether a given compound is a strong or weak acid, or a strong or weak base, in water.
18. Determine whether a given compound is a strong, weak, or nonelectrolyte.
19. For a given compound write the formula(s) and/or symbol(s) for the predominant species present in an aqueous solution of the compound.
20. Be able to solve any of the worksheet problems or assigned textbook problems. (These are the problems at the back of a chapter that are assigned but not collected.)