

# STUDY SHEET

## EXAM 5

1. Define and/or describe: pressure, partial pressure, temperature, boiling point, vapor pressure, surface tension, viscosity, evaporation, melting point
- 2.
3. Know the relationship between absolute temperature (Kelvin) and average kinetic energy of the particles in a sample of matter.
4. Make conversions between Kelvin and Celsius temperatures.
5. Make conversions between pressures in atm and mm Hg (torr).
6. Using the combined gas law, at constant mass/moles, solve for one of the variables: P, V, or T, given the others. (Remember: temperature in Kelvin only!)
7. STP calculations
  - a. Know what standard temperature and pressure are.
  - b. Calculate the molar mass of a gas given its density or its mass and volume at STP.
  - c. Calculate the density of a gas at STP given its molar mass.
  - d. Know the molar volume of a gas at STP.
8. Ideal Gas Law calculations
  - a. Solve for one of the variables, P, V, n, or T, given R and the other variables. (Remember you must use Kelvin temperature in all calculations involving gases).
  - b. Calculate the molar mass of a gas given mass, V, T, P, and R.
  - c. Calculate the density of a gas given molar mass, V, T, P, and R.
9. Dalton's Law calculations
  - a. Given the total pressure and the partial pressures of all but one of the gases in a mixture of gases, calculate the partial pressure of that one gas.
  - b. Given the partial pressures of gases in a mixture, calculate the total pressure.
10. Gas Stoichiometry: For a reaction in which one or more of the reactants or products are gases:
  - a. Given the volume of one (or two) gaseous reactant or product at constant temperature and pressure, calculate the volume of another gaseous reactant or product.
  - b. Given the mass (and molar mass) or moles of a gaseous reactant or product at STP, calculate the volume of another reactant or product.
  - c. Given the mass (and molar mass) of one gaseous reactant or product at given temperature and pressure, calculate the volume of another gaseous reactant or product.
  - d. Given the volume and molarity of an aqueous solution of one reactant or product, calculate the amount (moles, volume, grams, etc.) of a gaseous reactant or product.
- 11.
12. Explain why the boiling point of a liquid varies with external pressure.
- 13.
14. Given the mass and temperature of a sample of solid or liquid water, calculate the amount of heat (J or cal) required to change it to liquid or gas at a given temperature. You will also be given specific heats of solid, liquid and gaseous water, and heats of fusion and vaporization for water.
15. Be able to solve any of the assigned textbook problems. (These are the problems at the back of a chapter that are assigned but not collected.)