

CHM1025 Study Guide for Exam 4 (Chapters 10, 11, & 12)
Revised November 20, 2013

This may NOT be a complete list of what will be on the Test. You must also study class notes, the homework, and the textbook. You will still need to know the information from Test 1, 2 & 3. This is just a study guide to help you.

1. Enthalpy, entropy, First and Second Law of Thermodynamics.
2. Calculate the amount of heat lost or gained when there is a temperature change.
3. Calculate the amount of heat lost or gained when the amount of reactant or product is given.
4. Hess' Law problems = where you add up reactions to get the ΔH of an overall reaction.
5. Heat = (specific heat)(mass) ΔT
6. $\Delta T = T_{\text{final}} - T_{\text{initial}}$
7. Write Complete and Condensed Electron Configurations.
8. Know number of orbitals of each type of orbital and how many electrons they hold.
9. One s orbital, three p orbitals, five d orbitals, seven f orbitals, 2 electrons fit into each orbital, so s orbitals hold 2 e-, p orbitals hold 6e-, d orbitals hold 10e-, and f orbitals hold 14e-.
10. Identify the largest or smallest Ionization Energy of different elements.
11. Identify the largest or smallest atomic size of different elements.
12. Identify polar or nonpolar covalent bonds.
13. Identify largest or smallest electronegativity of elements.
14. Write electron configuration of atoms and ions.
15. Lewis Structure is also called Electron Dot Structure. Be able to draw Electron Dot Structure for any atom or molecule.
16. Identify number of valence electrons of an atom.
17. Identify number of electron domains in a molecule, identify the Electron Domain Geometry, and the Molecular Geometry.

Definitions or examples: specific heat, exothermic, endothermic, calorimeter, first law of thermodynamics, second law of thermodynamics, spontaneous process, entropy, greenhouse effect, electromagnetic radiation, emr, wavelength, frequency, photon, Bohr model, H atom emit light, principal energy levels, s, p, d, & f orbitals, probability map or density, Pauli Exclusion Principle, deBroglie matter wavelength, electron configuration, periodic properties, ionization energy, atomic size, enthalpy, entropy, work, heat, energy, units of energy, law of conservation of energy, potential energy, kinetic energy, state function, system, surroundings, ozone, combustion reaction, spontaneous process, emission of light by atoms, electrons gaining or losing energy and moving to different energy levels, principal energy level, valence shell, excited state, ground state, electron configuration of ions of elements in s or p block, ionic bonding, covalent bonding, bond energy, bond, polar covalent bond, nonpolar covalent bond, electronegativity, bonding pair of electrons, nonbonding pair of electrons, lone pair of electrons, single bond, double bond, triple bond, resonance structures, Octet Rule, exceptions to octet rule, number of electron domains, electron domain geometry, molecular geometry, linear, trigonal planar, tetrahedral, trigonal pyramidal, bent, VSEPR, valence shell, valence electron.