

CHM1025 Study Guide for Exam 2 (Chapters 4, 5, &6)
Revised October 30, 2014

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. This is just a study guide to help you.

1. Know the chemical symbols and English names of elements: #1-38, 47-48, 50, 53-56, 78-80, 82, 86-88, and 92.
2. Be able to identify the number of protons, electrons and/or neutrons in an atom or ion.
3. Be able to identify the atomic number and/or mass number of an atom.
4. Be able to write the complete element symbol (which includes the atomic number and mass number).
5. Be able to identify isotopes.
6. Know the group names and be able to identify elements in each group: alkali metals, alkaline earth metals, halogens, noble gases, transition metals.
7. Be able to classify any element as a metal, nonmetal, or metalloid.
8. Know the 7 naturally occurring diatomics and write their chemical formula: H₂, O₂, N₂, F₂, Cl₂, Br₂, and I₂.
9. Identify the number of protons and electrons in atoms and ions.
10. For fixed charged ions, know how many electrons the neutral atom lost or gained.
11. Know the fixed charged ions, their charges, and their names.
12. Know how to name variable charged ions from the ion, or know how to write the ion from the name of a variable charged ion. ie. Pb⁺² = lead (II) ion, or copper (I) ion = Cu⁺¹.
13. Know names and formulas of polyatomic ions given on handout. (See below.)
14. Be able to write chemical formulas and chemical names for ionic compounds including with polyatomic ions.
15. Be able to write chemical formulas and chemical names for covalent compounds.
16. Know the common names of the following compounds:
 - H₂O = water
 - H₂O₂ = hydrogen peroxide
 - NH₃ = ammonia
 - CH₄ = methane
16. Be able to write the names of acids given the chemical formula, or write the chemical formula given the name.
17. Identify reactants and/or products in a chemical reaction.
18. List some signals that a chemical reaction has occurred.
19. Be able to write the chemical equation, given the reaction in words.
20. Be able to balance chemical reactions.

Know definitions and identify examples of:

Law of constant composition, Dalton's atomic theory, compound, chemical formula, atom, structure of atom, protons, neutrons, electrons, nucleus, atomic number, mass number, isotopes, periodic table, period, group, metal, nonmetal, metalloid, group names, ions, cations, anions, ionic compounds, covalent compounds, fixed charged ions, variable charged ions, diatomics, common names, chemical reaction, chemical equation, reactants, products, atoms are neither created nor destroyed, balanced reaction, physical states of atoms or compounds, coefficients.

CHM1025 – Nonmetal (fixed charged) ion names (you must know)

H^{-1}	hydride	N^{-3}	nitride	O^{-2}	oxide	F^{-1}	fluoride
				S^{-2}	sulfide	Cl^{-1}	chloride
						Br^{-1}	bromide
						I^{-1}	iodide

Selected Metal Fixed Charged Ions:

Na^{+}	sodium ion	K^{+}	potassium ion
Li^{+}	lithium ion	Mg^{+2}	magnesium ion
Ca^{+2}	calcium ion	Ba^{+2}	barium ion
Al^{+3}	aluminum ion		

Selected Metal Variable Charged Ions:

(the Roman number is equal to the charge on the ion)

Ni^{+1}	nickel (I) ion	Ni^{+2}	nickel (II) ion
Fe^{+2}	iron (II) ion	Fe^{+3}	iron (III) ion
Pb^{+2}	lead (II) ion	Pb^{+4}	lead (IV) ion
Cu^{+1}	copper (I) ion	Cu^{+2}	copper (II) ion

CHM1025 – Polyatomic Ions (you must know)

NH_4^+ ammonium ion

ClO_2^- chlorite ion

ClO_3^- chlorate ion

NO_2^- nitrite ion

NO_3^- nitrate ion

HCO_3^- bicarbonate ion

OH^- hydroxide ion

CO_3^{2-} carbonate ion

SO_3^{2-} sulfite ion

SO_4^{2-} sulfate ion

Fixed Charged Ions CHM1025

	1 1A	2 2A											13 3A	14 4A	15 5A	16 6A	17 7A		
1																			
2	3 Li ⁺														7 N ⁻³	8 O ⁻²	9 F ⁻¹		
3	11 Na ⁺	12 Mg ⁺²	3 3B	4 4B	5 5B	6 6B	7 7B	8 8B	9 8B	10 8B	11 1B	12 2B	13 Al ⁺³		15 P ⁻³	16 S ⁻²	17 Cl ⁻¹		
4	19 K ⁺	20 Ca ⁺²													33	34	35 Br ⁻¹		
5	37 Rb ⁺	38 Sr ⁺²														52	53 I ⁻¹		
6	55	56 Ba ⁺²																	
7	87	88																	