**Chemistry Final – Fall Semester 2016-2017**

**Itemized Review**

1. Accurately measure mass, length, and volume using appropriate lab equipment
2. Differentiate between and apply accuracy and precision
3. Use experimental data to calculate density
4. Demonstrate proper lab technique with respect to safety
5. Make measurements using various metric units (mass, length, volume)
6. Complete calculations using the appropriate number of significant figures
7. Calculate percent error
8. Write and read numbers in scientific notation
9. Determine the average atomic mass of given isotopes
10. Identify the atomic structure for neutral atoms and ions
11. List the indicators of a chemical change
12. Compare and contrast elements, compounds, and mixtures
13. Demonstrate the law of conservation of mass
14. Distinguish between physical and chemical properties / changes
15. Determine the atomic composition for a given element
16. Identify pairs of isotopes
17. Compare and contrast intensive versus extensive properties using examples
18. Determine which elements from the periodic table have similar properties
19. Distinguish between atomic models, recognizing the theory used today
20. Explain the emission of light from an atom
21. Calculate one-step problems using frequency, wavelength, and energy
22. Write electron configurations for a given atom or ion
23. Compare and contrast the Pauli exclusion principle, the Aufbau principle, and Hund’s rule
24. Apply the Pauli exclusion principle, the Aufbau principle, and Hund’s rule to electron configurations
25. Express the correct orbital notation for a given element or ion
26. Calculate two-step problems using frequency, wavelength, and energy
27. Discuss scientific contributions to the atomic model
28. Write out shorthand electron configurations
29. Identify the appropriate electron configurations for a given element or ion
30. Apply the trends from the periodic table
31. Identify and explain the role of the quantum numbers
32. Identify the locations of the subatomic particles
33. Explain the role of the Roman numeral when writing chemical formulas
34. Write the formula for a given molecular (covalent) compound
35. Write the name for a given molecular (covalent) formula
36. Balance ionic charges to write an ionic compound
37. Write the formula for a given ionic compound
38. Write the name for a given ionic formula
39. Explain why ion charges must be balanced when writing formulas
40. List the diatomics
41. Explain the mole concept
42. Differentiate between cationic and anionic single replacement reactions
43. Write a skeleton equation from a given scenario
44. Write chemical equations from word equations
45. Balance equations – identify a single coefficient or all coefficients
46. Compare and contrast the types of chemical reactions based on basic characteristics
47. Predict the products of a double replacement reaction
48. Identify the types of chemical reactions
49. Recognize the states of matter in chemical equations
50. Define the term “precipitate”
51. Balance equations – identify a set of coefficients
52. Set up dimensional analysis calculations for multiple variables
53. Differentiate between solids, liquids, and gases
54. Use the periodic table in an appropriate manner
55. Name common chemical compounds
56. Write common chemical formulas
57. Differentiate between groups of the periodic table
58. Identify elements in a chemical compound
59. Use solubility rules to identify precipitates in a double replacement reaction
60. Identify the state of matter for a precipitate
61. Predict products of different reaction types and balance equations with states of matter
62. Define the term “chemistry”
63. Determine the percent yield for a given reaction
64. Interpret and apply phase diagrams
65. Identify common products of different reaction types
66. Explain the concept of Avogadro’s number
67. Define and apply the concept of molar mass
68. Apply the diatomics to various calculations and concepts
69. Calculate the mass of a given element that is contained in a compound
70. Use experimental data to determine the percent composition for a given substance
71. Differentiate between empirical and molecular formulas
72. Determine a compound’s empirical formula from provided data
73. Determine a compound’s molecular formula from provided data
74. Solve one and two step mole calculations
75. Use lab data for various applications and calculations as needed