



Summer AP Chemistry Assignment

School Year 2018-2019

Dr. Scott Fleischer

Textbook: CHEMISTRY by Zumdahl and Zumdahl 9th Edition

Dear Students,

Welcome to AP Chemistry! This class is going to be extremely interesting, challenging, fast-paced, and of course, FUN!. It is impossible to cover all of the material required by the AP College Board in the time allotted, so you have some work to do over the summer. **The due date for this summer assignment is the first day of class (or sooner) August 2018.** Please be prepared to take a summative assessment on this material by the end of the first week of school.

Directions: There are 3 parts to this summer assignment. Please place all answers on this Google document and SHARE it with me when you are finished.

Part I: Please define, as completely as possible, all of the vocabulary terms in Part I.

Proton

Neutron

Electron

Cathode Ray Tube

Atomic Number

Mass Number

Isotopes

Speed of Light (C)

Wavelength (λ)

Frequency (ν)

Planck's Constant

Electromagnetic Radiation

Ground State electrons

Excited State electrons

Heisenberg Uncertainty Principle

Photoelectric Effect

Aufbau Principle

Pauli Exclusion Principle

Hund's Rule

Ionization Energy

Electron Affinity

Atomic Radii

Kinetic Molecular Theory (KMT)

Dipole-Dipole Attraction (Van der Waals)

Ion-Dipole Attraction

Induced Dipole (London Dispersion forces)

Hydrogen Bonding

Isoelectronic ions

Directions: Part II, please use the textbook Zumdahl and Zumdahl 9th Edition to complete the questions from listed pages.

Part II: Questions from the textbook Zumdahl and Zumdahl CHEMISTRY 9th Edition

Page 73 #21, 22,

Page 74 #28, 35, 39,

Page 341 #1, 12

Page 342 #39, 40,

Page 344 #71

Directions: Part III, please complete these free response questions as completely as possible by showing all math work and proper units when applicable, or by describing in detail any experiment, comparison of atoms, or periodic trends.

Part III: Free Response Questions from the textbook Zumdahl and Zumdahl

CHEMISTRY 9th Edition

Chapter 2:

1a. Explain what J.J. Thomson's Cathode Ray Tube experiment was and what subatomic particle he discovered.

1b. Explain what Rutherford's Gold Foil experiment was and what it discovered

Chapter 7:

1a. What is the frequency (ν) of a wave with a wavelength (λ) of 450 nm?

$$1.0 \times 10^9 \text{ nm} = 1 \text{ m} \quad C = \lambda\nu$$

1b. Using your answer from part a, what is the energy of a single photon? $E = h\nu$

2a. Compare and Contrast J.J. Thomson's Plum Pudding model of the atom to Rutherford's model of the atom.

2b. Compare those two scientists' atoms to Niels Bohr's atom.

3a. What is the trend in Ionization Energy as you go down the Group on the Periodic Table? As you go across a Period?

3b. What is the trend in Electron Affinity as you go down the Group on the Periodic Table? As you go across a Period?

3c. What is the trend in Atomic Radii as you go down the Group on the Periodic Table? As you go across a Period?

Chapter 8

1a. What is the trend in Atomic Radii of ions as you go down the Group on the Periodic Table?

As you go across a Period?