

## Homework Assignment #3

Due Feb 10

Please complete all of this on your own paper. Do not write on the assignment sheet.

1. **Vocabulary:** Use your notes to define the following terms. For each definition include an example of the term, and other information you got from your notes. On exams, terms will be graded as follows: 2 pts for correct answer, 1 pt for example, and one point for depth of answer.
  - a. Scientific Model
  - b. Valence electron
  - c. Cation
  - d. Semi-metal

### Questions

2. Compare the plum pudding model with the nuclear model of the atom.
  - a. How would they differ in arrangement of particles?
  - b. How would the mass distribution be different?
  - c. How would the charge distribution be different?
3. Describe the observations you made when we did the experiment in class with the diffraction gratings and the tubes of Hydrogen, Helium and Nitrogen. What important feature of atomic structure did that experiment demonstrate?
4. Draw the Bohr model for Phosphorus (P). Include all protons, neutrons, and electrons.
5. A scientist is experimenting with a sample of an unknown element. The substance is a poor conductor of electricity, is a gas at room temperature, and has 6 valence electrons.
  - a. What charge would be on an ion of this element?
  - b. If the scientist was able to figure out the element was from period three (row 3) what would be the identity of the element?
6. Read the attached excerpt for the Washington Post on Jan 31. Then answer the following questions.
  - a. Do you think this article describes an example of science done well, or describes an example of science done poorly. Apply the concepts in Ch.1 to the specifics from this story to discuss how you made your evaluation.
  - b. Being the first to publish a result is highly prized in science. After reading the article, what role do you think that pressure played in this story? What does the public need to know about science that you read about in the paper?