

I. ASSIGNMENT

- A. Read and study all of chapter six.
- B. Do all of the review and practice problems within the reading.
- C. Do the following problems on pages 141-145: 1, 2, 6, 8, 10, 14-19, 22, 27, 29, 33, 34, 37, 43, 48, 67, and 70.

II. UNIT OBJECTIVES

After you have completed this unit, you should be able to:

1. Trace the development of models of the atom through the charge-cloud model.
2. Show that the atomic theory is consistent with experimental observations.
3. State the properties of atoms and subatomic particles.
4. Describe the relationship between emission spectra and the structure of atoms.
5. Use the concept of atomic mass.
6. Explain what SPM and STM are.
7. Describe how SPM is used to provide evidence for the existence of atoms.
8. Understand the nature of light: velocity, frequency, wavelength relationships, electromagnetic spectrum, and other wave properties.
9. Describe how a scanning tunneling microscope works.

III. SCHEDULE OF CLASSROOM ACTIVITIES

1. Begin a discussion of chapter 6. Be sure to have read through section 6-4 prior to coming to class.
2. Do Experiment 6-1, “The Masses of Equal Volumes of Gases.”
3. View the program on Atomic Theory from the “Mechanical Universe” series. Be sure to have read through section 6-10 before coming to class.
4. Begin a discussion on Scanning Probe Microscopy (SPM). A hand-out will be distributed. Be sure to have read through section 6-12 before coming to class.
5. Do Investigation 3, “Scanning Probe Simulation.”
6. Discuss the nature of light. Be sure to have read through section 6-15 before coming to class.
7. Do the Experiment 6-2, “Emission Spectra and Energy Levels.”

8. Finish chapter 6 discussion with an emphasis on atomic mass, mass number, isotopes, and atomic masses from relative abundances.
9. Review the chapter and SPM.
10. Test on chapter 6.

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