**The Atom & Quantum (Energetics)**

****

**See** [**https://www.learningctronline.com/courses**](https://www.learningctronline.com/courses) **for Materials and Resources.**

**Topics:**

1. The Atom & Quantum (Energetics)

**Objectives:**

1. Explain the energy levels of atoms.
2. Understand that atoms are mostly empty space (Rutherford) and energy is quantized (Bohr).
3. Calculate energy, frequency, and wavelength of light absorbed or released by electrons when excited (absorption spectra) or returning to the ground state (emission spectra).
4. Recognize the color or portion of the light spectrum relating to electron energy, frequency and wavelength and where it fits in the electromagnetic spectrum.

TAKE NOTE

1. Reading (Hewitt Text)

1. Notes Energy Levels of the Atom
2. Problem Set: The Atom
3. Lab: Emission Spectra (Follow Up)
4. Test The Atom & Quanta
5. Class Song: Now, It’s Time
6. Week 18 Devotional (<https://www.learningctronline.com/devotional>)

**Text**: Chapters 17 & 38 The Atom & Quantum (Hewitt)

**Class Notes: Energy Levels of the Atom & Modern Atomic Theory**

**Homework**:

* Problem Set: The Atom

**Lab**: Emission Spectra (Follow Up)

* Perform the lab as directed using the worksheet provided.
* Complete all calculations and data, showing work whenever appropriate.
* Conclusions should be answered in complete sentences that convey a complete thought.
* Save the documents into your LAB folder in the Physics folder on your desktop.

**TEST:** The Atom

1) the academic integrity policy

* Tests must be completed **WITHOUT** referring to books, notes, the internet, people, or any outside resources.
* Students **MAY** use the approved Periodic Tables, approved Reference Tables, or approved equation (formula) sheet (provided by the teacher) along with calculators and scratch paper.
* A guardian should be proctoring the test. Proctoring means to monitor the following:

2) The test is composed of 9 written problems. Some questions have subparts.

3) There is a **60-minute time limit** on this test. Please have the proctor write the time taken at the top of your answer sheet with their signature or initials.

4) Proctors should NOT be reading the test or engaging students during the test.

5) Do NOT use RED font. Black font is best.

Supplemental Resources (Optional)

1. Modern Atomic Theory Notes.
2. Nature of Light Notes

[PHET Simulation: Atomic Model History](http://screencast-o-matic.com/watch/cD6ZXZj5Ma) (5:37)

[Electron Configuration (Review) Song](https://screencast-o-matic.com/watch/cq6nYuuIbb) (3:24)

<http://somup.com/cr1olCqkPR> Emission Spectra (0:49)

<http://somup.com/cr1ooeqp6w> Emission Spectra Lab (2:33)

<http://somup.com/crjT2YriIi> Uncertainty Principle with Pennies (1:28)