

Periodic Trends/Practice Test/Short Essays/AP Chemistry

The vast majority of periodic trend arguments should focus upon four lines of reasoning:

1. Coulomb's Law, $E_{el} = \frac{kQ_1Q_2}{d}$ This equation can be used to justify protons attracting electrons or electrons repelling electrons.

2. Z_{eff} , nuclear effective charge, or simply (+) nuclear force

3. electron configurations These describe the addresses for the electrons in an atom.

4. High energy is proportional to instability and low energy is proportional to stability.
Minimizing electron/electron repulsions leads to stability. Having opposite magnetic electron spins allows for more electrons to enter a confined space.

1. An unknown element (X) is a *non-metal* and has the valence electron configuration of ns^2np^3 .

A) What are some possible identities for this element?

B) What is the formula of the compound that this element would form with rubidium?

C) Would this element have a larger or smaller atomic radius than rubidium?

2. Use the principals of atomic structure to answer the following question. The atomic radius of strontium is 200 pm. The ionic radius of Sr is 118 pm. Account for this difference.

3. The first ionization energy of Be is 899.5 kJ/mol and that of B is 800.5 kJ/mol. Account for this difference.