

Enriched Chemistry - Chapter 6

Wkst: Trends – AP level questions

1. Answer the following questions about the element selenium, Se (atomic number 34).
 - (a) Samples of natural selenium contain six stable isotopes. In terms of atomic structure, explain what these isotopes have in common, and how they differ.

 - (b) Write the complete electron configuration (e.g., $1s^2 2s^2 \dots$ etc.) for a selenium atom in the ground state. Indicate the number of unpaired electrons in the ground-state atom, and explain your reasoning.

 - (c) In terms of atomic structure, explain why the first ionization energy of selenium is
 - (i) less than that of bromine (atomic number 35), and

 - (ii) greater than that of tellurium (atomic number 52).

2. Use principles of atomic structure and to answer each of the following.
 - (a) The radius of the Ca atom is 0.197 nanometer; the radius of the Ca^{2+} ion is 0.099 nanometer. Account for this difference.

 - (b) A calcium atom is larger than a zinc atom