

## CHEM105 Unannounced Quiz 6

*Name on back only please*

*Please show all formulas and all work to receive any credit*

1. Clearly show how the effective nuclear charge is determined for a chlorine atom. Identify and diagram the important interactions involved and describe specifically what the effective nuclear charge represents.
2. Define what is specifically meant by ionization energy and by electron affinity.
3. Predict how the first ionization energy for chlorine atoms compares with that for argon atoms. Fully support your prediction using all key underlying physical principles.
4. Predict how the electron affinity for chlorine atoms compares with that for argon atoms. Fully support your prediction using all key underlying physical principles.
5. List each set of atoms or ions in order of ***increasing*** radius:
  - a. Rn, Ba, Pb
  - b. Cl<sup>-</sup>, K<sup>+</sup>, Ca<sup>2+</sup>
  - c. Te, Br, Ar