CHEM 1104 TEST#4

NAME: **Date: June 11, 2018**
Student Number:

Equations:

1s, 2s, 2p, 3s, 3p, 4s, 3d, 4p, 5s, 4d, 5p, 6s, 4f, 5d, 6p, 7s, 5f, 6d

1. Write the **complete** electron configuration for the following atoms and/or ions:

a) Ca:

b) Ca^{2+}:

c) I:

d) I^-:

2. Rewrite the electron configuration for the atom and/or ion using the short hand notation utilizing the noble gas elements.

a) Ca:

b) I:

3. Circle the **larger** atom or ion in each of the following pairs:

a) B or C b) C or Si c) F or F^-

4. What is the trend in atomic size found in the periodic table? Briefly explain this trend.

5. Draw the Lewis structures, including formal charges, for the following molecules and/or ions.

a) HI

b) BrO^-

c) ClF_2^+

d) HCN

Answer Set for CHEM 1104 TEST#4

1.a) Ca: $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2$
b) Ca^{2+}: $1s^2 2s^2 2p^6 3s^2 3p^6$
c) I: $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^2 4d^{10} 5p^5$
d)) I^-: $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^2 4d^{10} 5p^6$

2. a) Ca: $[Ar]4s^2$
b) I: $[Kr]5s^2 4d^{10} 5p^5$

3.a) B, b) Si, c) F^-

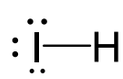
4. Atomic size increases going down a group in the periodic table and decreases left to right across a period in the periodic table.

Atomic size increases down a group because as you go down a group you are adding electrons to a new n level and thus are further away from the nucleus.

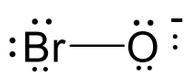
Atomic size decreases left to right across a period because while you are adding electrons, they are added to the same n level. Thus the increasing positive nuclear charge can pull the electrons closer and atomic size decreases in magnitude.

5.

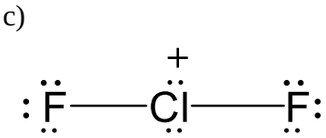
a)



b)



c)



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