Homework 10

November 4, 2022

Weekly homework assignments are posted approximately one week prior to the due date. Collaborations are encouraged and students must report all collaborators in writing on each assignment. All external sources (websites, books) must be properly cited. Additional problems are listed at the end of each assignment. This week's assignment is due *Friday, Nov 11th at 11:59pm.*

Electron Configurations

1) Determine the electron configurations for the following elements: (2 pts)

a) V

b) Sr

c) Ge

d) Au

e) I

2) Determine the electron configurations for the following ions: (2 pts)

a) Fe^{3+}

b) Y^{3+}

c) Pb^{+}

d) O^{2-}

e) Mo^{5+}

Periodic Properties of Atoms

Ionization Energy

3) Predict which as the largest first ionization energy: Mg, Ba, B, O, and Te. (1 pt)

4) Based on their positions in the periodic table, predict which has the smallest first ionization energy: Na, Cs, N, F, I. (1 pt)

5) Which main group atom would be expected to have the lowest second ionization energy? (1 pt)

6) Based on their positions in the periodic table, rank the following atoms or compounds in order of increasing first ionization energy: Na, Mg, O, S, Si, and He. (1 pt)

Atomic Radius

7) Rank the following based on atomic size: H, Li, B, O, F, At, Ra. (1 pt)

8) Based on their positions in the periodic table, list the following ions in order of increasing radius: K^+, Ca^{2+}, Al^{3+}, Si^{4+}, I^-. (1 pt)

Optional Textbook Problems: Ch. 7- 7.55 – 7.83 odd, 7.85 – 7.107