CHEM 120 Homework 3. Chapter 3

1. In the modern periodic table, the elements are arranged according to increasing ________.
   a. atomic masses b. number of neutrons c. atomic number d. mass number

2. How many periods are found on the periodic table?
   a. 2     b. 7    c. 18   d. 32

3. Which period contains the element Cesium?
   a. 2     b. 4    c. 6    d. 7

4. Where are the alkaline earth metals located on the periodic table?
   a. Group 1 (IA) b. Group 2 (IIA) c. Group 13 (IIIA) d. Group 14 (IVA) e. Group 17 (VIIA)

5. Which one of the following is not a representative element
   a. Na b. As c. Ca d. Fe e. Cl

6. How many orbitals are in an \( s \) sublevel? How many in a \( p \) sublevel?
   a. 2;6       b. 1;1     c. 1;3    d. 3;5

7. Which of the following correctly gives the electron capacity of a principal energy level in terms of the number \( n \)?
   a. \( n \)   b. \( 2n \)  c. \( 2n + 2 \) d. \( n^2 \) e. \( 2n^2 \)

8. What requirement must be met in order for two electrons to coexist in the same orbital?
   a. they go to a \( s \) orbital
   b. they go to a \( p \) orbital
   c. they must have opposite spins
   d. they must have parallel spins

9. The electronic configuration in an atom of argon,
   a. \( 1s^22s^2 \)
   b. \( 1s^22s^22p^6 \)
   c. \( 1s^22s^22p^63s^23p^6 \)
   d. \( 1s^22s^22p^63s^23p^64s^23d^{10}4p^6 \)

10. Common valence electron configuration of halogens
    a. \( ns^1 \)  b. \( ns^2 \) c. \( ns^23p^2 \) d. \( ns^2 np^3 \) e. \( ns^2 np^5 \)

11. What is not isoelectronic with K\(^+\)?
    a. S\(^2-\) b. Ar c. Cl\(^-\) d. Na\(^+\) e. Ca\(^{2+}\)

12. Which of the following atoms has the biggest size (radius)?

13. Which of the following elements has the highest ionization energy?
    a. Li b. B c. O d. F e. Ne

14. Which one of the following elements has the highest electron affinity?
    a. Li b. K c. Kr d. O e. Cl

15. What charge is found on a ion from Al?
    a. +1 b. -2 c. +3 d. -3