FOR PRACTICE

CHEMISTRY – PERIODIC TABLE – BASIC REVIEW

Name(s) _____

C 1. In the modern periodic table, elements are ordered _?_.

A. According to decreasing atomic mass
B. According to Mendeleev's original design
C. According to increasing atomic number
D. Based upon when they were discovered

C 2. Fluorine, the first element in Group 17 has 9 electrons in its neutral state. The next member of the same family would have __?__ electrons.

A. 10 electrons
B. 12 electrons
C. 17 electrons
D. 27 electrons

A 3. The most distinctive property of the alkali metals is that they are _?_.

A. Very reactive
B. Dense
C. Nonreactive
D. Radioactive

F 4. Name the smallest halogen (smallest atomic radius).

Na 5. Name the element in period 3 that is the largest (largest atomic radius).

C 6. Name the Group 14 element with the greatest electronegativity.

Be 7. Name the alkaline earth metal with the greatest electron affinity.

B 8. Choose the correct order of elements from lowest to highest ionization energy:

A. Ca Ba Ra
B. Ra Ba Ca
C. Ca Ra Ba

C 9. Choose the correct order of elements from lowest to highest ionization energy:

A. Cl At I
B. Cl I At
C. At I Cl

FOR PRACTICE

C 10. Choose the correct order of elements from smallest to largest atomic radius:

A. Mg S Ar
B. Rb Na Li
C. Ag Ru Sr

C 11. Which of the following elements has the greatest electronegativity (be careful!):

A. Co
B. Ba
C. N
D. Kr

C 12. Which of the following elements is the smallest?

A. Co
B. Ba
C. N
D. Kr

Determine the charges the following elements will form when they react:

Li $^{+1}$

S $^{-2}$

Ne ^{0}

P $^{-3}$

Ca $^{+2}$

List the number of valence electrons the following elements have:

K 1

Al 3

As 5

I 7

32

FOR PRACTICE

Honors Chemistry **Practice Periodic Table Test**

I. Multiple Choice

1. In the modern periodic table, elements are ordered
   A) according to decreasing atomic mass
   B) according to Mendeleev's original design
   C) according to increasing atomic number
   D) based on when they were discovered

2. The electron configuration of krypton _____ based on its position on the periodic table.
   A) shows a single electron in the highest energy level
   B) shows full *s* and *p* orbitals in the highest principal energy level
   C) indicates a high level of reactivity
   D) fully explains the increasing atomic mass within the group.

3. Beryllium and calcium are _____ based on their position on the periodic table.
   A) less reactive than lithium and potassium
   B) less reactive than neon and krypton
   C) less dense than lithium and sodium
   D) have the same electron configurations as chlorine and bromine

4. Lithium and potassium are _____ based on their positions on the periodic table.
   A) alkali metals B) transition metals C) halogens D) noble gases

5. Fluorine and chlorine are _____ based on their positions on the periodic table.
   A) alkaline-earth metals C) halogens
   B) transition elements actinides D) noble gases

6. As you move down the periodic table in a family, atomic radii
   A) generally increase C) generally decrease
   B) do not change D) vary unpredictably

7. As you move left to right in a period, atomic radii
   A) generally increase C) generally decrease
   B) do not change D) vary unpredictably

8. The energy it takes to attract an electron from an atom _____ as you move across a period.
   A) generally increases C) generally decreases
   B) does not change D) varies unpredictably

9. Which element has the abbreviated electron configuration, [Ar] $4s^2,3d^{10},4p^6$?
   A) Krypton B) Xenon C) Zinc D) Lead

10. Which element has the abbreviated electron configuration, [Rn] $7s^2,5f^{14}6d^1$?
    A) Actinium B) Rutherfordium C) Lawrencium D) Lutetium

11. Cesium has the abbreviated electron configuration,
    A) [I] $5p^6,6s^1$ B) [Rn] $7s^1$ C) [Cs] D) [Xe] $6s^1$

33

FOR PRACTICE

12. Which general trend exists for ionization energy across a period?
    A) Ionization energy increases
    B) Ionization energy decreases
    C) Ionization remains fairly constant.
    D) Ionization energy first increases then decreases

13. What general trend exists for ionization energy down a family?
    A) Ionization energy increases
    B) Ionization energy decreases
    C) Ionization remains fairly constant.
    D) Ionization energy first increases then decreases

14. Which group tends to have the highest ionization energy? The lowest?
    A) halogens; alkaline earth metals
    B) alkaline earth metals; halogens
    C) alkali metals; noble gases
    D) noble gases; alkali metals

15. Magnesium has a higher ionization energy then aluminum because
    A) magnesium is a smaller atom.
    B) magnesium is in the 3rd energy level.
    C) magnesium has a filled *s* orbital
    D) Al is a metalloid.

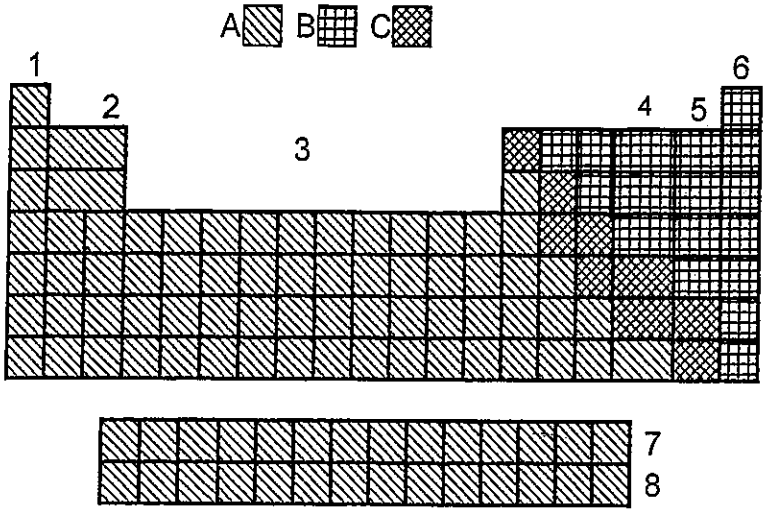
16. Fluorine has a higher ionization energy than chlorine because
    A) fluorine is a halogen
    B) fluorine is smaller than chlorine
    C) fluorine needs to gain one electron
    D) chlorine has less protons than fluorine

17. Which of the following statements regarding ionization energy is true?
    A) Periodic trends in ionization energies are opposite those for atomic size.
    B) Periodic trends in ionization energies are opposite those for electronegativity.
    C) Periodic trends in ionization energies are opposite those for electron affinity.
    D) none of the above

34

FOR PRACTICE

Use the diagram below to answer questions 18-25.



18. In which family are all the elements chemically unreactive?
a. 2 b. 3 c. 4 d. 5 e. 6

19. In which region are the elements that do not conduct electricity?
a. A b. B c. C

20. The metals are in which region?
a. A b. B c. C

21. Which family has the most reactive metals?
a. 1 b. 2 c. 3 d. 4 e. 5

22. The transition metals are
a. 2 b. 3 c. 4 d. 5

23. The lanthanide series is
a. 1 b. 3 c. 6 d. 7 e. 8

24. Mendeleev received more credit for creating the period table than Meyer because Mendeleev
a. used atomic numbers
b. organized elements into triads
c. left spaces for undiscovered elements
d. had a better publicist

25. The contribution made by the Newlands' law of octaves to the development of the periodic table was
a. the idea of atomic mass
b. the use of repeating properties
c. use of atomic number
d. the introduction of periods and families

26. The elements in the modern periodic table are arranged by increasing
a. density b. size c. atomic mass d. activity e. atomic number

FOR PRACTICE

27. Elements in the same family have similar chemical properties because
    a. they have the similar atomic masses
    b. their electron arrangement is similar
    c. they are the same size
    d. none of these

28. Which of the following is ***not*** a property of a metal?
    a. they react with acids
    b. they conduct electricity
    c. they are malleable
    d. they form negative ions

29. The repetition of similar properties at regular intervals when elements are arranged by increasing atomic number is known as
    a. Mendeleev's Rule
    b. Law of Conservation of Mass
    c. Avogardo's Law
    d. periodic law

30. Which element has properties that most resemble argon?
    a. oxygen b. barium c. iodine d. xenon

Match the element to the description:

31. alkaline earth metal B
32. alkali metal D
33. noble gases E
34. halogens C
35. transition metal A
36. has a completely filled outer energy level E
37. lowest density metal ("soft") D
38. can form multiple cation charges when reacts A
39. has 1 valance electron D
40. forms -1 anion C
41. forms +2 cation B

a. copper
b. magnesium
c. chlorine
d. sodium
e. neon

36