

Hannah
Name: _____

Period: _____

Pretest: Periodic Table

Score = _____/100
Credits = _____/5

Part I

Directions: Circle the letter for the answer that best answers the question. Three points each.

- Elements in the Periodic Table are arranged according to their
 - atomic number
 - atomic mass
 - relative activity
 - relative size
- The properties of carbon are expected to be most similar to those of
 - boron
 - aluminum
 - silicon
 - phosphorus
- Which element is found in period 6, group 4?
 - Ti
 - Cr
 - Hf
 - Pb
- Which of the group 1 elements listed below requires the greatest amount of energy to remove the most loosely held electron from an atom?
 - lithium
 - sodium
 - potassium
 - rubidium
- As the elements in Group 15 are considered in order of increasing atomic number, which sequence in properties occurs?
 - nonmetal → metalloid → metal
 - metalloid → metal → nonmetal
 - metal → metalloid → nonmetal
 - metal → nonmetal → metalloid
- Which of the following groups in the Periodic Table contain elements so highly reactive they are never found in the free state?
 - 1 and 2
 - 1 and 11
 - 2 and 15
 - 11 and 15
- The presence of which ion usually produces a colored solution?
 - K^+
 - F^-
 - Fe^{2+}
 - S^{2-}
- Which element is brittle in the solid phase and is a poor conductor of heat and electricity?
 - calcium
 - sulfur
 - strontium
 - copper
- Which of the following elements has the greatest ability to attract electrons?
 - Li
 - Be
 - Na
 - Mg

10. Which list of elements contains two metalloids?
(1) Ga, Ge, Sn (3) C, Si, Ge
(2) Si, P, S (4) B, C, N
11. If the chemical formula for magnesium fluoride is MgF_2 , then the chemical formula for calcium fluoride would be expected to be
(1) Ca_2F
(2) CaF
(3) Ca_2F_3
(4) CaF_2
12. Properties of nonmetal atoms include
(1) low ionization energy and low electronegativity
(2) low ionization energy and high electronegativity
(3) high ionization energy and low electronegativity
(4) high ionization energy and high electronegativity
13. Which Group 15 element exists as a diatomic molecule at room temperature?
(1) phosphorus (3) bismuth
(2) nitrogen (4) arsenic
14. Which group 17 element is a liquid at room temperature?
(1) Br_2 (3) Cl_2
(2) F_2 (4) I_2
15. Which statement best describes Group 2 elements as they are considered in order from top to bottom of the Periodic Table?
(1) The number of energy levels increases, and the number of valence electrons increases.
(2) The number of energy levels increases, and the number of valence electrons remains the same.
(3) The number of energy levels remains the same, and the number of valence electrons increases.
(4) The number of energy levels remains the same, and the number of valence electrons decreases.
16. Which element attains the structure of a noble gas when it becomes a $1+$ ion?
(1) K (3) F
(2) Ca (4) Ne
17. As the elements of Group 16 are considered in order from top to bottom, the atomic radius of each successive element increases. This increase is primarily due to an increase in
(1) atomic number
(2) mass number
(3) the number of protons occupying the nucleus
(4) the number of occupied electron energy levels

18. Which element has an ionic radius that is larger than its atomic radius?

- (1) fluorine
- (2) sodium
- (3) iron
- (4) magnesium

19. Which ion has the largest radius?

- (1) Li^+
- (2) Be^{2+}
- (3) Na^+
- (4) Mg^{2+}

20. Diamond, graphite, and coal are all allotropes of what element?

- (1) silicon
- (2) carbon
- (3) oxygen
- (4) sulfur

Part II

Directions: Answer the following questions. Show work where appropriate. Partial credit will be given.

1 A 20.00 gram piece of an unknown metal is found to have a volume of 12.90 cm^3 .

a. Calculate the density of the metal.

Show all work. [3]

Give the correct answer to the nearest thousandth. [3]

Include appropriate units. [3]

b. Using *Reference Table S*, determine the name of the metal. [3] _____

2 Element 119 has yet to be discovered.

a. To what group in the Periodic Table would you expect element 119 to belong? [3]

b. How many valence electrons would you expect this element to have? [3]

c. Would this element be expected to be a metal, nonmetal, or metalloid? [3]
