Chapter 5 Quiz Review

Read the following questions and choose the best answer. Record your answer on the answer sheet – do not write on the test.

1. Elements in the Periodic Table are arranged according to their
   (1) atomic mass
   (2) atomic number
   (3) relative activity
   (4) relative size

2. Which element has a total of 5 valence electrons in the fifth energy level?
   (1) Sb (2) Bi (3) I (4) Br

3. The elements in Period 3 all contain the same number of
   (1) protons
   (2) neutrons
   (3) energy levels (rings)
   (4) valence electrons

4. How many electrons are in the valence shell of an atom of carbon in the ground state?
   (1) 2 (2) 3 (3) 4 (4) 6

5. 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.

6. Which statement describes the elements in Period 3?
   (1) Each successive element has a greater atomic radius.
   (2) Each successive element has a lower electronegativity.
   (3) All elements have similar chemical properties.
   (4) All elements have valence electrons in the same principal energy level.

7. Which of the following is a metal that is also a liquid?
   (1) Mg (2) Br (3) Hg (4) Al

8. Which of the following is the only member of Group IA that is a gas?
   (1) N (2) Na (3) Cs (4) H

9. The majority of elements on the periodic table are found as:
   (1) solids
   (2) gases
   (3) metalloids
   (4) liquids

10. Typical characteristics of metals are:
    (1) they have a characteristic luster and shine
    (2) they conduct heat and electricity only at high temperatures Semi metals
    (3) they are brittle Non-metals
    (4) all of the above

11. Atoms of metals tend to:
    (1) lose electrons and become negative ions
    (2) lose electrons and become positive ions
    (3) gain electrons and become positive ions
    (4) gain electrons and become negative ions

12. Which group contains a metalloid (semimetal)?
(1) IA (2) IIA (3) IIIA (4) VIIIA

13. Which element exhibits both characteristics of both metals and nonmetals?
(1) Bi (2) Ag (3) Te (4) He

14. Which property is characteristic of nonmetals?
(1) They have a high electronegativity.
(2) They lose electrons easily.
(3) They have a low first ionization energy.
(4) They are good conductors of electricity.

15. Which element reacts vigorously with water?
(1) Zn (2) Li (3) Cu (4) Fe

16. An alkali metal would most readily react with:
(1) another alkali metal
(2) an alkaline earth metal
(3) a halogen
(4) a noble gas

17. Which of the following is the atomic number of an alkaline earth metal?
(1) 10 (2) 12 (3) 14 (4) 17

18. An alkaline earth metal is _____ an alkali metal?
(1) less reactive than
(2) more reactive than
(3) has the same reactivity as

19. Atoms that may have several different ionic states belong to:
(1) halogens (3) noble gases
(2) the alkali metals (4) the transition metals

20. Plutonium belongs to which group:
(1) alkali metals (3) inner transition metals
(2) transition metals (4) alkaline earth metals

21. The elements in group 7A are called:
(1) halogens (3) noble gases
(2) alkali metals (4) alkaline earth metals

22. The elements in group 7A typically form ions with that charge?
(1) 1- (2) 2- (3) 2+ (4) 1+

23. Which group of elements satisfies the "octet rule" without forming an ion?
(1) the halogens (3) the noble gases
(2) the alkali metals (4) the transition metals

24. Which of these elements has an atom with the most stable outer electron configuration?
(1) Na (2) Ca (3) Cl (4) Ne

25. How many electrons are in the outermost energy level of an oxygen atom?
(1) 2 (2) 4 (3) 6 (4) 8

26. What is the total number of electrons found in the valence shell of an alkaline earth metal?
(1) 2 (2) 3 (3) 4 (4) 7

27. Compare to an atom of potassium, an atom of cesium has a
(1) a smaller atomic radii
(2) a larger atomic radii
(3) the same atomic radii

28. As the elements of group IA are considered from top to bottom, the atomic radius of each successive element increases. This increase is primarily due to an increase in:
(1) mass number
(2) atomic number
(3) the number of protons occupying the nucleus
(4) the number of occupied energy levels

29. Which of the following atoms radius increases when it forms an ion?
(1)aluminum (3) chlorine
(2) magnesium (4) sodium

30. Which ion has the smallest radius?
(1) Na^{+1} (2) Mg^{+2} (3) Al^{+3} (4) Cl^{-1}

31. When an atom loses outer electrons, it becomes:
(1) a cation with a negative charge
(2) a cation with a positive charge
(3) an anion with a negative charge
(4) an anion with a positive charge

32. Which of the following forms an anion?
(1) neon (2) calcium (3) oxygen (4) Argon

33. The amount of energy required to remove the most loosely bound electron from an atom is the:
(1) first ionization energy (3) activation energy
(2) electron affinity (4) electronegativity

34. The most reactive group of nonmetals are the:
(1) inner transition elements (3) transition elements
(2) halogens (4) alkaline earth elements

35. An element with properties similar to chlorine would be:
(1) Br (2) Fe (3) P (4)S

36. Which properties are most common in nonmetals?
(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

37. Which halogen has the highest ionization energy?
(1) Br (2) F (3) I (4) Cl

38. The atoms of which group have the lowest ionization energy?
(1) IA (2) IIA (3) VI A (4)VIIA

39. Which of the following follow the same trend as ionization energy?
(1) atomic radii
(2) atomic numbers
(3) ionic radii
(4) electronegativity

40. The power of an atom to attract electrons to itself when forming a covalent bond is called:
(1) electronegativity
(2) ionization energy
(3) electron affinity
(4) an isotope

41. Which element has the greater electronegativity?
(1) calcium
(2) aluminum
(3) oxygen
(4) cobalt

42. Compared to atoms of metals, atoms of nonmetals generally:
(1) have higher electronegativities
(2) have lower first ionization energies
(3) conduct electricity more readily
(4) lose electrons more readily

43. Which of the following atoms has the strongest attraction for electrons?
(1) boron (2) fluorine (3) zinc (4) sulfur

44. Which of the noble gases has the highest first ionization energy?
(1) radon (2) krypton (3) neon (4) helium

45. According to the periodic table, which of the following series of elements is ordered by decreasing electronegativity?
(1) He, Cs, Si, Mg
(2) Cs, Mg, Si, He
(3) Si, He, Cs, Mg
(4) Si, Mg, Cs, He

46. Who developed the first periodic table:
(1) Mendeleev
(2) Mosely
(3) Ramsey
(4) Rutherford

47. How many energy levels are found in the elements in period 3?
(1) 2 (2) 3 (3) 4 (4) 5

48. Which group contains metals, metalloids, and nonmetals?
(1) IIA (2) IIB (3) IVA (4) IVB

49. Mosely's work led to the realization that elements with similar properties occurred at regular intervals when the elements were arranged according to atomic size. This is referred to as:
(1) Atomic Properties
(2) Modern Periodic Law
(3) Extensive Properties
(4) Mendeleev's Law

50. Which element attains the structure of a noble gas when it becomes a 1+ ion?
(1) K (2) Ca (3) F (4) Ne

Name: _____ Block: ___ Date: _____

Chapter 5

Record on the periodic table below the following:

1. Place ***arrows*** on the ends of the trends to indicate the larger/higher area. (1 pt each/ total 6 pts)
2. Place an "**X**" on the line over any group that does not exhibit a given trend. (1 pt)
3. Indicate the number of valence electrons for each group a on the line given. (0.5 pts each/ total 4 pts)
4. Indicate the charge for each group A on the line given. (0.5 pts each/ total 4 pts)
5. ***Shade*** in the semi metals. (1 pt)
6. Place an "**X**" on any element that is liquid at room temperature. (1 pt/ total 2)

electronegativity

ionization energy

atomic radii

1 2 — # of valence electrons present

1+ 2+ — Charge for group

IA IIA

3 4 5 6 7 8

3+ 4+ 2+ 4− 3− 2− 1− 0

IIIA IVA VA VIA VIIA VIIIA

X

Electronegativity

Ionization Energy

Atomic Radii

1 H																	2 He
3 Li	4 Be											5 B	6 C	7 N	8 O	9 F	10 Ne
11 Na	12 Mg											13 Al	14 Si	15 P	16 S	17 Cl	18 Ar
19 K	20 Ca	21 Sc	22 Ti	23 V	24 Cr	25 Mn	26 Fe	27 Co	28 Ni	29 Cu	30 Zn	31 Ga	32 Ge	33 As	34 Se	35 Br	36 Kr
37 Rb	38 Sr	39 Y	40 Zr	41 Nb	42 Mo	43 Tc	44 Ru	45 Rh	46 Pd	47 Ag	48 Cd	49 In	50 Sn	51 Sb	52 Te	53 I	54 Xe
55 Cs	56 Ba	57 La	72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Hg	81 Tl	82 Pb	83 Bi	84 Po	85 At	86 Rn
87 Fr	88 Ra	89 Ac	104 Rf	105 Db	106 Sg	107 Bh	108 Hs	109 Mt	110	111	112	113	114				

58 Ce	59 Pr	60 Nd	61 Pm	62 Sm	63 Eu	64 Gd	65 Tb	66 Dy	67 Ho	68 Er	69 Tm	70 Yb	71 Lu
90 Th	91 Pa	92 U	93 Np	94 Pu	95 Am	96 Cm	97 Bk	98 Cf	99 Es	100 Fm	101 Md	102 No	103 Lr

Record your answers to the multiply choice questions below. (1 pt each)

1.	11.	21.	31.	41.
2.	12.	22.	32.	42.
3.	13.	23.	33.	43.
4.	14.	24.	34.	44.
5.	15.	25.	35.	45.
6.	16.	26.	36.	46.
7.	17.	27.	37.	47.
8.	18.	28.	38.	48.
9.	19.	29.	39.	49.
10.	20.	30.	40.	50.