Chemistry CP I Name: Key

Practice Test Chapter 4

Circle the letter of the correct answer choice.

1. List the 5 most abundant elements on earth?

   Oxygen Silicon aluminum iron calcium

2. List the 5 most abundant elements in the human body?

   Oxygen Carbon Hydrogen Nitrogen Calcium

3. State the Law of Constant Composition.

   a compound always contains the same fixed ratio of elements.

4. State the Law of Conservation of Matter

   Matter can NOT be created nor destroyed; only rearranged

5. State the Law of Conservation of Energy

   Energy can NOT be created nor destroyed; only transfered

6. The law of constant composition applies to

   A. heterogeneous mixtures B. homogeneous mixtures

   B. metalloids D. compounds E. metals

7. Define Compound.

   a unique substance created by the chemical combination of 2 or more elements in a fixed ratio

8. Define Element

   a substance that cannot be further broken down into a more simple substance

9. How many total hydrogen atoms are indicated by the formula $H_2C_8H_4O_2$?

   A. 4 B. 6 C. 12 D. 16 E. 20

10. The chemical formula Al_2O_3 indicates

    A. six atoms of each element

    B. five atoms of each element

    C. three atoms of aluminum and two atoms of oxygen

    D. two atoms of aluminum and three atoms of oxygen

Chemistry CP I Name: Key
Practice Test Chapter 4

E. the chemical formula does not tell you the number of atoms

11. Which sub atomic particle determines the chemical behavior of the atom?

Electron

12. Which particle has the smallest mass?

Electron

13. How many protons, electrons and neutrons does $^{127}_{53}I$ have?

A. 53 protons, 53 electrons and 74 neutrons
B. 53 protons, 74 electrons and 53 neutrons
C. 53 protons, 53 electrons and 127neutrons
D. 74 protons, 74electrons and 53 neutrons

14. Define ISOTOPE.

the same element with a different number of neutrons

15. How do you calculate the mass number (atomic mass) of an isotope?

add number of protons and neutrons

16. The atomic number of an atom equals

A. the number of neutrons plus number of protons
B. the number of neutrons
C. the mass number of the atom
D. the number of protons

17. Which pair has **approximately** the same mass?

A. electron and proton
B. electron and neutron
C. proton and neutron

18. Which pair has exhibits opposite charge characteristics?

A. electron and proton
B. electron and neutron
C. proton and neutron

19. Who is responsible for discovering the "nuclear atom"?

Ernest Rutherford

Chemistry CP I Name: Key

Practice Test Chapter 4

20. Who defined the term ELEMENT?

Robert Boyle

21. Who used the "gold foil experiment"?

Ernest Rutherford

22. What was discovered in the Gold Foil Experiment?

The Proton

23. The man who first described the concept of an atom with his atomic theory is

A. Boyle B. Chadwick C. Dalton D. Rutherford

24. State the Atomic Theory of 1808.

1. all elements are made of atoms
2. atoms of 1 element are identical
3. atoms of different elements are different
4. atoms of 1 element can combine w/ atoms of other elements in a fixed ratio to form compounds
5. atoms cannot be created or destroyed

25. The man responsible the layout/design of the periodic table is

A. Chadwick B. Dalton C. Mendeleev D. Thomson

26. Which of the following statements is true:

I. The number of protons in an element is the same for all neutral atoms of that element.

II. The number of electrons in an element is the same for all neutral atoms of that element.

III. The number of neutrons in an element is the same for all neutral atoms of that element.

A. Only II and III are true

B. Only I and II are true

C. Only I and III are true

D. All are true

Chemistry CP I Name: Key

Practice Test Chapter 4

Please fill in the appropriate element Name for the following symbols.

27. What element is represented by the symbol Na? Sodium
28. What element is represented by the symbol Pt? platinum
29. What element is represented by the symbol S? Sulfur
30. What element is represented by the symbol Hg? mercury

Please match the following: Note Choices on the right will be used multiple times to fill in the left.

31. Sodium A
32. Antimony C
33. Oxygen B
34. Iron A
35. Boron B or C
36. Aluminum A
37. Helium B

A. Metal
B. Non Metal
C. Metalloid

Complete the following with a word or phrase.

38. The Group 8 elements are known by the family name Noble Gases.
39. The Group 2 elements are known by the family name Alkali Earth Metals.
40. The Group 1 elements are known by the family name Alkali Metals.
41. The Group 7 elements are known by the family name Halogens.
42. The elements in the center of the periodic table (short columns between group 2 and 3) are known by the family name Transition Metals.
43. One of the rows of elements set off to the bottom of the periodic table is known by the family name Lanthanide Series or actinide series.
44. Provide an example for the family listed in Question 38. He, Ne, Ar, Kr, Xe, Rn
45. Provide an example for the family listed in Question 39. Be, Mg, Ca, Sr, Ba, Ra
46. Provide an example for the family listed in Question 40. Li, Na, K, Rb, Cs, Fr
47. Provide an example for the family listed in Question 41. F, Cl, Br, I, At

Chemistry CP I Name: Key

Practice Test Chapter 4

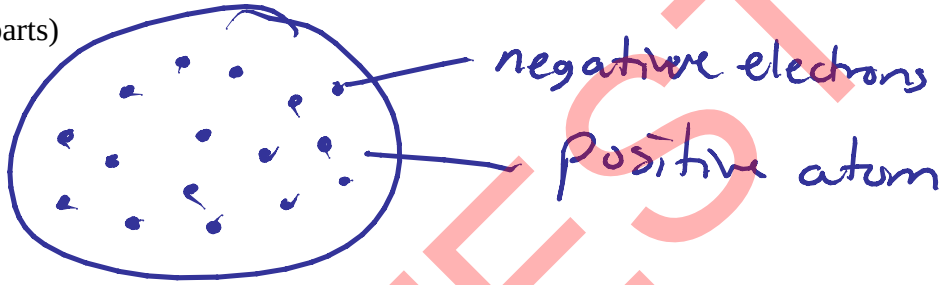
48. Provide an example for the family listed in Question 42. Zn, Cu, Ag, Au, Mn, Fe ... ETC!!

49. Provide an example for the family listed in Question 43. _____

Lanthanide: Cerium ETC.

Actinide: Uranium ETC.

50. Please draw a representation of the model of an atom before the concept of the nuclear atom was proven. (Note: Label your parts)



51. Write the chemical formula for a compound containing two iron atoms and three oxygen atoms.

Fe_2O_3

52. Write the chemical formula representing a compound containing one carbon atom and four oxygen atoms.

CO_4

53. Write the chemical formula for a compound containing half as many magnesium ions as fluorine atoms.

MgF_2

54. Write the chemical formula for a compound containing equal numbers of sodium and nitrogen atoms but three times as many oxygen atoms as there are sodium atoms.

$NaNO_3$

Fill in the following chart based on your knowledge of isotopes.

Name	Symbol	Atomic Number	Mass Number	Number of Neutrons
55. Vanadium	56. $^{50}_{23}V$	**23**	~~27~~ OOPPS! 50	57. 27
Calcium	58. $^{41}_{20}Ca$	59. 20	60. 41	**21**

Chemistry CP I Name: _____

Practice Test Chapter 4

For the following describe the number of protons, neutrons and electrons present.

	Number of Protons	Number of Neutrons	Number of Electrons
$^{65}_{30}Zn^{+2}$	61. 30	62. 35	63. 28
$^{78}_{34}Se^{-2}$	64. 34	65. 44	66. 36

For each of the following indicate, by circling the correct answer, how the atom will form an ion.

67. Magnesium GAIN ELECTRONS LOSE ELECTRONS

68. Sulfur GAIN ELECTRONS LOSE ELECTRONS

Please indicate **how many** electrons would be gained/lost in the following equations.

69. Sn → Sn^{3+} + 3 electrons

70. P + 3 electrons → P^{3-}

Please fill in the correct ion symbol in the following equations.

71. Na → Na^{1+} + 1 electron

72. O + 2 electrons → O^{2-}

73. Write the atomic symbol (Hint: A,Z,X) for an isotope of Selenium with a mass number of 79.

$^{79}_{34}Se$

74. Write the atomic symbol (Hint: A,Z,X) for atomic number 38, with 50 neutrons.

$^{88}_{38}Sr$

75. Write the chemical formula for a compound made from Potassium and Fluorine ions.

KF

76. Write the chemical formula for a compound made from Mn^{2+} and P^{3-}.

Mn_3P_2

77. Explain why a solution of sodium chloride in water conducts an electric current, but a solution of sugar does not conduct an electric current.

Sodium Chloride is an ionic compound and is able to conduct electricity when dissolved in water; sugar is not an ionic compound and does not conduct electricity

Chemistry CP I Name: Key

Practice Test Chapter 4

78. Why does an ionic compound conduct electricity when it is melted, but not when it is solid?

ions have to be able to move freely - cant do that when solid

79. Name an element that is a liquid at room temperature.

Bromine, mercury

80. Name an element that is a monatomic gas at room temperature.

Helium, neon, Argon krypton Xenon radon

81. Explain what a diatomic molecule is and give an example on one.

molecule made of 2 atoms of some element

H_2, N_2, O_2, F_2, Cl_2, Br_2, I_2

82. Explain what an allotrope is and give an example (hint: carbon has allotropes)

different physical form of the same element

Carbon - graphite, diamond, buckminsterfullerene (Buckey Ball)

Please fill in the following chart with the correct relative charges and masses of the three sub atomic particles discovered in the early 1900's by Rutherford and Chadwick.

	Relative Charge	Relative Mass	Location
Proton	83. +	84. 1836	85. nucleus
Neutron	86. 0	87. 1839	88. nucleus
Electron	89. −	90. 1	91. Surrounding nucleus

92. Name 3 properties of a metal.

Shiny, malleable, ductile Conduct heat Conduct electricity

93. Name 3 properties of a non metal

insulator of heat dull

insulator of electricity brittle

Name the following ions

94. I^-

iodide ion

95. Na^+

Sodium ion

Chemistry CP I Name: Key

Practice Test Chapter 4

On the periodic table below label the following groups:

96. Group 1

97. Group 2

98. Group 3

99. Group 4

100. Group 5

101. Group 6

102. Group 7

103. Group 8

104. On your periodic table draw in the line that separates the metals from the non metals.

105. Circle one element that is a liquid at 25°C.

106. Draw a star on one of the noble metals.

107. Shade an element that is a monatomic gas.

The Periodic Table of the Elements

1 H Hydrogen 1.00794																	8
3 Li Lithium 6.941	4 Be Beryllium 9.012182											5 B Boron 10.811	6 C Carbon 12.0107	7 N Nitrogen 14.00674	8 O Oxygen 15.9994	9 F Fluorine 18.9984032	10 Ne Neon 20.1797
11 Na Sodium 22.989770	12 Mg Magnesium 24.3050											13 Al Aluminum 26.981538	14 Si Silicon 28.0855	15 P Phosphorus 30.973761	16 S Sulfur 32.066	17 Cl Chlorine 35.4527	18 Ar Argon 39.948
19 K Potassium 39.0983	20 Ca Calcium 40.078	21 Sc Scandium 44.955910	22 Ti Titanium 47.867	23 V Vanadium 50.9415	24 Cr Chromium 51.9961	25 Mn Manganese 54.938049	26 Fe Iron 55.845	27 Co Cobalt 58.933200	28 Ni Nickel 58.6934	29 Cu Copper 63.546	30 Zn Zinc 65.39	31 Ga Gallium 69.723	32 Ge Germanium 72.61	33 As Arsenic 74.92160	34 Se Selenium 78.96	35 Br Bromine 79.904	36 Kr Krypton 83.80
37 Rb Rubidium 85.4678	38 Sr Strontium 87.62	39 Y Yttrium 88.90585	40 Zr Zirconium 91.224	41 Nb Niobium 92.90638	42 Mo Molybdenum 95.94	43 Tc Technetium (98)	44 Ru Ruthenium 101.07	45 Rh Rhodium 102.90550	46 Pd Palladium 106.42	47 Ag Silver 107.8682	48 Cd Cadmium 112.411	49 In Indium 114.818	50 Sn Tin 118.710	51 Sb Antimony 121.760	52 Te Tellurium 127.60	53 I Iodine 126.90447	54 Xe Xenon 131.29
55 Cs Cesium 132.90545	56 Ba Barium 137.327	57 La Lanthanum 138.9055	72 Hf Hafnium 178.49	73 Ta Tantalum 180.9479	74 W Tungsten 183.84	75 Re Rhenium 186.207	76 Os Osmium 190.23	77 Ir Iridium 192.217	78 Pt Platinum 195.078	79 Au Gold 196.96655	80 Hg Mercury 200.59	81 Tl Thallium 204.3833	82 Pb Lead 207.2	83 Bi Bismuth 208.98038	84 Po Polonium (209)	85 At Astatine (210)	86 Rn Radon (222)
87 Fr Francium (223)	88 Ra Radium (226)	89 Ac Actinium (227)	104 Rf Rutherfordium (261)	105 Db Dubnium (262)	106 Sg Seaborgium (263)	107 Bh Bohrium (262)	108 Hs Hassium (265)	109 Mt Meitnerium (266)	110 (269)	111 (272)	112 (277)	113	114				

58 Ce Cerium 140.116	59 Pr Praseodymium 140.90765	60 Nd Neodymium 144.24	61 Pm Promethium (145)	62 Sm Samarium 150.36	63 Eu Europium 151.964	64 Gd Gadolinium 157.25	65 Tb Terbium 158.92534	66 Dy Dysprosium 162.50	67 Ho Holmium 164.93032	68 Er Erbium 167.26	69 Tm Thulium 168.93421	70 Yb Ytterbium 173.04	71 Lu Lutetium 174.967
90 Th Thorium 232.0381	91 Pa Protactinium 231.03588	92 U Uranium 238.0289	93 Np Neptunium (237)	94 Pu Plutonium (244)	95 Am Americium (243)	96 Cm Curium (247)	97 Bk Berkelium (247)	98 Cf Californium (251)	99 Es Einsteinium (252)	100 Fm Fermium (257)	101 Md Mendelevium (258)	102 No Nobelium (259)	103 Lr Lawrencium (262)