

PRACTICE CHEMISTRY FINAL

NAME _____

DATE _____

DIRECTIONS – Read each question and pick the best answer. Circle or write the letter in the margin next to the number. You will be able to use a Periodic Table and a calculator only.

- _____ The symbol for the element silver is:
 - S
 - Ag
 - Au
 - Hg
- _____ The symbol for an atom of Potassium is:
 - Po
 - P
 - K
 - Na
- _____ Identify the polyatomic ion below:
 - Li^{+1}
 - O_2
 - NO_3^{-1}
 - Br_2
- _____ A solvent
 - Does the dissolving
 - Is dissolved
 - Is alcohol
 - Is water
- _____ Which of the following is NOT a diatomic gas?
 - Hydrogen
 - Fluorine
 - Strontium
 - Nitrogen
- _____ How many hydrogen atoms are represented by the formula $\text{Al}(\text{C}_2\text{H}_3\text{O}_2)_2$?
 - 12
 - 6
 - 9
 - 3
- _____ The subscript "4" in the formula CaSO_4 indicates the number of:
 - Sulfate ions
 - Calcium ions
 - Oxygen atoms
 - Sulfur atoms
- _____ The correct name for the compound LiNO_3 is:
 - Lithium Nitride
 - Lithium Nitrate
 - Lithium Nitrite
 - Lithium Nitrogen Oxide
- _____ The correct formula for Strontium Bromide is:
 - SrBr
 - Sr_2Br_2
 - Sr_2Br
 - SrBr_2
- _____ What is the correct formula for Aluminum Carbonate?
 - $\text{Al}_2(\text{CO}_3)_3$
 - NH_4CO_3
 - AlCO_3
 - Al_4C_3
- _____ After an electron absorbs energy and moves to a higher energy level, it will:
 - Release light
 - Stay excited
 - Decompose
 - Leave the atom
- _____ K and Zn are examples of
 - Mixtures
 - Elements
 - Halogens
 - Compounds
- _____ The following can be physically separated:
 - Homogeneous mixture
 - Compound
 - Element
 - Transition metal
- _____ How many electrons can Hydrogen and Helium have in their valence shells?
 - 8
 - 6
 - 4
 - 2
- _____ How would you classify this reaction?
$$\text{N}_2 + 3\text{H}_2 \rightarrow 2\text{NH}_3$$
 - Decomposition
 - Synthesis
 - Single Replacement
 - Combustion
- _____ Electric current can decompose water into two gases, therefore, water is:
 - An element
 - A mixture
 - A solution
 - A compound
- _____ Rust, or Iron (III) Oxide, is an example of:
 - An element
 - A mixture
 - A solution
 - A compound
- _____ $\text{NaCl}(\text{aq})$, or salt water, is an example of:
 - An element
 - A mixture
 - A solution
 - A compound

19. _____ How would you classify this reaction?
 $2\text{LiBr} + \text{F}_2 \rightarrow 2\text{LiF} + \text{Br}_2$
- Decomposition
 - Synthesis
 - Combustion
 - Single Replacement
20. _____ The following techniques are used for separating mixtures EXCEPT:
- Hydrolysis
 - Filtration
 - Distillation
 - Evaporation
21. _____ An atom with an electron configuration of $1s^2, 2s^2, 2p^6, 3s^2, 3p^5$ would be classified as:
- a Noble gas
 - a Halogen
 - an Alkali metal
 - a Metal
22. _____ Which of the following is NOT the property of a metal?
- Has luster
 - Conducts electricity
 - Is brittle
 - Is ductile
23. _____ An example of an Alkaline Earth Metal is:
- Sodium
 - Magnesium
 - Chlorine
 - Argon
24. _____ An atom with eight electrons in its valence shell would be classified as a:
- Noble gas
 - Halogen
 - Metal
 - Lanthanide
25. _____ Which particle has a charge of 0?
- A neutron
 - An electron
 - A proton
 - A quark
26. _____ The nuclei of atoms consist of:
- Neutrons and electrons
 - Protons only
 - Protons and electrons
 - Protons and neutrons
27. _____ The number of protons in an atom always:
- Equals the mass number
 - Equals the number of electrons
 - Equals the number of neutrons
 - Equals the atomic number
28. _____ Which number represents the charge of the nucleus of a phosphorus atom?
- +16
 - +15
 - +31
 - 31
29. _____ The number of neutrons in a Sodium atom with a mass of 23 is:
- 11
 - 12
 - 22
 - 23
30. _____ What is the charge/mass of an electron?
- / 0
 - / 1
 - + / 0
 - + / 1
31. _____ Which is the electron configuration of a Magnesium atom?
- $1s^2, 2s^2, 2p^6, 3s^1$
 - $1s^2, 2s^2, 2p^6, 3s^2$
 - $1s^2, 2s^2, 2p^6, 3s^2, 3p^2$
 - $1s^2, 2s^2, 2p^6$
32. _____ An atom losing two electrons will have a charge of:
- 2
 - 6
 - + 2
 - + 6
33. _____ When a Sodium atom loses an electron, it becomes:
- An ion with a +1 charge
 - An ion with a - 1 charge
 - An ion with a - 11 charge
 - An atom of Neon
34. _____ Isotopes can be defined as:
- Different number of protons, same mass
 - Different number of protons, different mass
 - Same number of neutrons, different number of protons
 - Different number of neutrons, different mass
35. _____ The maximum number of electrons in the second energy level is:
- 2
 - 6
 - 8
 - 18
36. _____ Chlorine's valence electrons are found in the:
- Second energy level
 - Third energy level
 - Fourth energy level
 - First energy level
37. _____ Covalent bonds are formed by the sharing of:
- Protons
 - Ions
 - Neutrons
 - Electrons
38. _____ Which bond type is formed when nonmetals combine with nonmetals?
- Covalent
 - Molecular
 - Metallic
 - Hydrogen

39. _____ Ionic bonds typically occur between:
 a. Metals and nonmetals
 b. Metalloids and metals
 c. Nonmetals and nonmetals
 d. Metals and metals
40. _____ Which of the following does NOT conduct electricity?
 a. Neshaminy water
 b. Distilled water
 c. Salt water
 d. Hydrochloric acid
41. _____ Ionic bonding occurs when:
 a. An atom shares electrons with another atom
 b. Atoms exist in a sea of floating electrons
 c. Polar molecules are attracted to each other
 d. An atom transfers electrons from another atom
42. _____ Mendeleev organized the Periodic Table by:
 a. Atomic number
 b. Atomic mass
 c. Number of electrons
 d. Number of neutrons
43. _____ On the Periodic Table, the most active nonmetals are found in group:
 a. 17
 b. 18
 c. 2
 d. 1
44. _____ Based on the Periodic Table, these elements have similar properties:
 a. Li and Na
 b. Cu and Br
 c. O and Ba
 d. He and P
45. _____ Which atom has only one valence electron?
 a. Mn
 b. Rb
 c. F
 d. Kr
46. _____ A solid substance has a mass of 80 grams and a volume of 5 mL. What is the density of the solid?
 a. 40 g/mL
 b. 16 g/mL
 c. 0.0625 g/mL
 d. 400 g/mL
47. _____ Which element in group 2 of the Periodic Table is the least active metal?
 a. Be
 b. Mg
 c. Ca
 d. Sr
48. _____ Period 5 of the Periodic Table ends with:
 a. Xe
 b. Cd
 c. Sr
 d. Rb
49. _____ What is the percent composition of Potassium in Potassium Sulfate, K_2SO_4 ?
 a. 45%
 b. 28%
 c. 14%
 d. 39%
50. _____ What represents 3 moles of nitrogen molecules?
 a. N_3
 b. N_2
 c. 3N
 d. $3N_2$
51. _____ At STP, how many liters are there in one mole of gas?
 a. 22.4×10^{23}
 b. 1×10^{23}
 c. 22.4
 d. 6.02×10^{23}
52. _____ What is the atomic mass of Calcium?
 a. 20
 b. 60
 c. 40
 d. 12
53. _____ What is the molar mass of $Mg_3(PO_4)_2$?
 a. 119
 b. 71
 c. 262
 d. 231
54. _____ What is the total number of moles of Lithium Hydroxide (molar mass=24g) present in 72g of LiOH?
 a. 2 moles
 b. 4 moles
 c. 1 mole
 d. 3 moles
55. _____ How many moles are there in 340 grams of Ammonia, NH_3 ?
 a. 5
 b. 10
 c. 15
 d. 20
56. _____ In the reaction, $2NH_3 \rightarrow N_2 + 3H_2$, the H_2 is:
 a. A reactant
 b. A base
 c. A product
 d. A salt
57. _____ The maximum number of Hydrogen atoms that can bond with an Oxygen atom is: (think logically!)
 a. 1
 b. 2
 c. 3
 d. 4
58. _____ The atomic number of an atom indicates the:
 a. Element
 b. Charge
 c. Mass
 d. Size

59. _____ When the following equation is balanced,
 $\text{Mg} + \text{LiCl} \rightarrow \text{Li} + \text{MgCl}_2$ what is the coefficient of
 LiCl?
 a. 4
 b. 3
 c. 2
 d. 1
60. _____ Which of the following is an Alkaline
 Earth metal?
 a. Xenon
 b. Boron
 c. Potassium
 d. Magnesium
61. _____ Which of the following is a Halogen?
 a. Lithium
 b. Calcium
 c. Nitrogen
 d. Bromine
62. _____ What type of substance has its particles
 very densely packed and vibrating in position?
 a. Solid
 b. Liquid
 c. Gas
 d. Plasma
63. _____ Which of the following typically has a
 constant volume but the shape adjusts to its container?
 a. Solid
 b. Liquid
 c. Gas
 d. Plasma
64. _____ Hydrolysis can be used to decompose
 water into Hydrogen and Oxygen gas. Therefore, water
 is a:
 a. Mixture
 b. Element
 c. Compound
 d. Solution
65. _____ How many valence electrons are there in
 a Sulfur atom?
 a. 8
 b. 7
 c. 6
 d. 5
66. _____ The number of protons in the nucleus of
 an Aluminum atom is:
 a. 13
 b. 14
 c. 27
 d. 54
67. _____ Which scientist discovered that the atom
 was mostly empty space with a positively charged
 nucleus?
 a. Aristotle
 b. Dalton
 c. Thomson
 d. Rutherford
68. _____ What subatomic particle has a mass of
 approximately 1 amu and a charge of +1?
 a. Proton
 b. Electron
 c. Neutron
 d. Quark
69. _____ Which of the following is an endothermic
 reaction?
 a. A reaction that does not produce a temperature
 change
 b. A reaction that produces heat
 c. A reaction that forms a precipitate
 d. A reaction that absorbs heat
70. _____ If the pressure of a gas is held constant
 and the temperature is increased, the volume must:
 a. Increase
 b. Decrease
 c. Stay the same
71. _____ If the volume of a gas is held constant and
 the pressure decreases, the temperature must have:
 a. Increased
 b. Decreased
 c. Stayed the same
72. _____ If the temperature of a gas is held
 constant, what pressure will a 115 kPa sample of gas
 have if its volume is increased from 200 cm³ to 225 cm³?
 a. 102 kPa
 b. 129 kPa
 c. 23000 kPa
 d. 25875 kPa
73. _____ How many grams is 2.5 moles of
 $(\text{NH}_4)_2\text{SO}_4$?
 a. 290
 b. 330
 c. 295
 d. 157
74. _____ Given the reaction, $2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$,
 and 160 grams of O₂, how many grams of water would
 be produced?
 a. 360
 b. 180
 c. 90
 d. 36
75. _____ Which of the following is the correct
 orbital diagram for S⁻²?
 a. $(\uparrow\downarrow) (\uparrow\downarrow) (\uparrow\downarrow)(\uparrow\downarrow)(\uparrow\downarrow) (\uparrow\downarrow) (\uparrow\downarrow)(\uparrow) (\uparrow)$
 b. $(\uparrow\downarrow) (\uparrow\downarrow) (\uparrow\downarrow)(\uparrow\downarrow)(\uparrow\downarrow) (\uparrow\downarrow) (\uparrow\downarrow)(\uparrow\downarrow)(\uparrow\downarrow)$
 c. $(\uparrow\downarrow) (\uparrow\downarrow) (\uparrow\downarrow)(\uparrow\downarrow)(\uparrow\downarrow) (\uparrow\downarrow) (\uparrow) (\uparrow) ()$
 d. $(\uparrow\downarrow) (\uparrow\downarrow) (\uparrow\downarrow)(\uparrow\downarrow)(\uparrow\downarrow) (\uparrow\downarrow) () () ()$
76. _____ How many orbitals are in the d-sublevel?
 a. 1
 b. 3
 c. 5
 d. 7

77. _____ If the Electronegativity values of two bonding atoms are very different, what type of bond will form?
 a. Ionic
 b. Polar Covalent
 c. Nonpolar Covalent
 d. Metallic
78. _____ What is the shape of a NH_3 molecule?
 a. Tetrahedron
 b. Trigonal Pyramid
 c. Trigonal Planar
 d. Square Planar
79. _____ What is the solubility expression for KNO_3 ?
 a. $[\text{K}^{+1}][\text{NO}_3^{-1}]$
 b. $[\text{K}][\text{NO}_3]$
 c. $[\text{K}][\text{N}_2][\text{O}_2]$
 d. $[\text{KNO}_3]$
80. _____ What is the term given to the reactant that gets completely used up by the reaction?
 a. Excess Reactant
 b. Theoretical Reactant
 c. Experimental Reactant
 d. Limiting Reactant
81. _____ What type of reaction is the following;
 $\text{SO}_2 + \text{H}_2\text{O} + 120 \text{ kcal} \leftrightarrow \text{H}_2\text{SO}_3$
 a. Exothermic, reversible, synthesis
 b. Endothermic, reversible, decomposition
 c. Endothermic, reversible, synthesis
 d. Endothermic, reversible, single replacement
82. _____ Chlorine is a yellow-green gas that boils at -34.04°C and freezes at -101.5°C . It has a density of 3.214 g/L . Which property is considered qualitative?
 a. Yellow-green gas
 b. Boils at -34.04°C
 c. Freezes at -101.5°C
 d. Density of 3.214 g/L
83. _____ Which of the following measurements contain the most uncertainty?
 a. 6.7 g
 b. 89.054 g
 c. 3.15 g
 d. 17.21 g
84. _____ Which of the following would be a physical change?
 a. Lighting a candle
 b. Ice melting
 c. Grass growing
 d. Baking a cake
85. _____ What type of elements are typically poor conductors, brittle, and have fairly low melting and boiling points?
 a. Metals
 b. Metalloids
 c. Semi-metals
 d. Nonmetals
86. _____ What is a ground state electron?
 a. An electron in the first energy level
 b. An electron in the highest energy level
 c. An electron that has absorbed energy
 d. An electron in its lowest available energy level
87. _____ Who discovered the electron and developed the "plum-pudding" model of the atom?
 a. Rutherford
 b. Dalton
 c. Thomson
 d. Mendeleev
88. _____ Which of the following elements is the most Electronegative?
 a. Strontium
 b. Oxygen
 c. Phosphorus
 d. Silver
89. _____ Methane, CH_4 , and Ethane, C_2H_6 , are examples that prove which of the following?
 a. Law of Constant Composition
 b. Law of Conservation of Matter
 c. Law of Multiple Proportions
 d. Law of Definite Proportions
90. _____ If 50.0g of an unknown compound contains 15.7g of Copper. What is the percent composition of Copper in the compound?
 a. 15.7%
 b. 63.6%
 c. 31.4%
 d. Not enough info to determine
91. _____ Which of the following compounds shares electrons?
 a. KBr
 b. CO_2
 c. FeCl_3
 d. MnS
92. _____ What type of solute will dissolve in a nonpolar solvent?
 a. Polar compound
 b. Nonpolar compound
 c. Ionic compound
 d. Depends on the compound
93. _____ All of the following would allow a solid solute to dissolve faster, EXCEPT?
 a. Increase the Pressure of the solution
 b. Increase the Temperature of the solution
 c. Stirring or shaking
 d. Add more solvent
94. _____ What is the Molarity of a solution if 15g of LiBr is dissolved in 250 mL of water?
 a. $60. M$
 b. $0.00068 M$
 c. $0.060 M$
 d. $0.68 M$

ANSWERS

- | | | | |
|-----|---|-----|---|
| 1. | b | 49. | a |
| 2. | c | 50. | d |
| 3. | c | 51. | c |
| 4. | a | 52. | c |
| 5. | c | 53. | c |
| 6. | b | 54. | d |
| 7. | c | 55. | d |
| 8. | b | 56. | c |
| 9. | d | 57. | b |
| 10. | a | 58. | a |
| 11. | a | 59. | c |
| 12. | b | 60. | d |
| 13. | a | 61. | d |
| 14. | d | 62. | a |
| 15. | b | 63. | b |
| 16. | d | 64. | c |
| 17. | d | 65. | c |
| 18. | c | 66. | a |
| 19. | d | 67. | d |
| 20. | a | 68. | a |
| 21. | b | 69. | d |
| 22. | c | 70. | a |
| 23. | b | 71. | b |
| 24. | a | 72. | a |
| 25. | a | 73. | b |
| 26. | d | 74. | b |
| 27. | d | 75. | b |
| 28. | b | 76. | c |
| 29. | b | 77. | a |
| 30. | a | 78. | b |
| 31. | b | 79. | a |
| 32. | c | 80. | d |
| 33. | a | 81. | c |
| 34. | d | 82. | a |
| 35. | c | 83. | a |
| 36. | b | 84. | b |
| 37. | d | 85. | d |
| 38. | a | 86. | d |
| 39. | a | 87. | c |
| 40. | b | 88. | b |
| 41. | d | 89. | c |
| 42. | b | 90. | c |
| 43. | a | 91. | b |
| 44. | a | 92. | b |
| 45. | b | 93. | a |
| 46. | b | 94. | d |
| 47. | a | | |
| 48. | a | | |