

Revision # X May 6, 2007

Test Part #1- Matching: You may use any letter more than once & sometimes more than one response per question! In the unlikely event there is no correct response you must leave the question blank. You must get all responses or no response per question to get any credit for the question.

Identify each of the compounds:

- A.) Strong Acid    B.) Strong Base    C.) Salt    D.) Weak Acid    E.) Weak Base
- 1.) HCl
  - 2.) LiOH
  - 3.) NaOH
  - 4.) KCl
  - 5.)  $\text{Mg}(\text{OH})_2$
  - 6.)  $\text{HNO}_3$
  - 7.) HBr
  - 8.) HI
  - 9.) MgS
  - 10.)  $\text{MgCl}_2$
  - 11.)  $\text{CaCl}_2$
  - 12.)  $\text{CaSO}_4$
  - 13.)  $\text{K}_2\text{O}$
  - 14.) RbOH
  - 15.) CsOH
  - 16.)  $\text{H}_2\text{SO}_{4(\text{aq})}$
  - 17.)  $\text{H}_2\text{S}_{(\text{aq})}$
  - 18.)  $\text{HC}_2\text{H}_3\text{O}_{2(\text{aq})}$
  - 19.)  $\text{CH}_3\text{COOH}_{(\text{aq})}$
  - 20.)  $\text{NH}_3$
  - 21.)  $\text{HClO}_{4(\text{aq})}$
  - 22.) NaOH
  - 23.) KOH
  - 24.)  $\text{CsSO}_4$

Identify the compounds:

- |      | A.) Soluble                     | B.) Insoluble | C.) Slightly Soluble |
|------|---------------------------------|---------------|----------------------|
| 25.) | AgNO <sub>3</sub>               |               |                      |
| 26.) | NaNO <sub>3</sub>               |               |                      |
| 27.) | PbNO <sub>3</sub>               |               |                      |
| 28.) | LiCl                            |               |                      |
| 29.) | KCl                             |               |                      |
| 30.) | Na <sub>2</sub> SO <sub>4</sub> |               |                      |
| 31.) | AgCl                            |               |                      |
| 32.) | Hg <sub>2</sub> Cl <sub>2</sub> |               |                      |
| 33.) | HgCl                            |               |                      |
| 34.) | AgI                             |               |                      |
| 35.) | NaOOCCH <sub>3</sub>            |               |                      |
| 36.) | NH <sub>4</sub> NO <sub>3</sub> |               |                      |
| 37.) | Na <sub>2</sub> CO <sub>3</sub> |               |                      |
| 38.) | Na <sub>2</sub> S               |               |                      |
| 39.) | PbS <sub>2</sub>                |               |                      |
| 40.) | Na <sub>2</sub> S               |               |                      |
| 41.) | NaCl                            |               |                      |
| 42.) | K <sub>2</sub> S                |               |                      |

Calculate the oxidation number of element combined with oxygen:

- |      | A.) +7                                      | B.) +6 | C.) +5 | D.) +4 | E.) +3 |
|------|---|--------|--------|--------|--------|
| 43.) | NO <sub>3</sub> <sup>-</sup>                |        |        |        |        |
| 44.) | S <sub>2</sub> O <sub>6</sub> <sup>2-</sup> |        |        |        |        |
| 45.) | ClO <sub>3</sub> <sup>-</sup>               |        |        |        |        |
| 46.) | ClO <sub>2</sub>                            |        |        |        |        |
| 47.) | ClO <sub>2</sub> <sup>-</sup>               |        |        |        |        |
| 48.) | S <sub>2</sub> O <sub>4</sub> <sup>2-</sup> |        |        |        |        |
| 49.) | N <sub>2</sub> O <sub>4</sub>               |        |        |        |        |
| 50.) | HClO  |        |        |        |        |
| 51.) | NO <sub>2</sub> <sup>-</sup>                |        |        |        |        |
| 52.) | ClO <sub>3</sub> <sup>-</sup>               |        |        |        |        |
| 53.) | SO <sub>3</sub> <sup>2-</sup>               |        |        |        |        |
| 54.) | ClO <sub>4</sub> <sup>-</sup>               |        |        |        |        |
| 55.) | N <sub>2</sub> O <sub>5</sub>               |        |        |        |        |

Calculate the oxidation number of the element in ( ):

- A.) +1                      B.) 0                      C.) -1                      D.) -2                      E.) -3
- 56.)  $\text{H}_2(\text{S})$   
57.)  $\text{H}_2(\text{S}_2)$   
58.)  $(\text{S}_8)$   
59.)  $(\text{Br}_2)$   
60.)  $(\text{I}^-)$   
61.)  $(\text{Br})\text{O}^-$   
62.)  $(\text{P})\text{H}_3$   
63.)  $(\text{F}_2)$   
64.)  $(\text{N})\text{H}_4\text{OH}$   
65.)  $(\text{N}_2)$   
66.)  $(\text{N})\text{O}$   
67.)  $(\text{Ag})$

Match value of constants with units:

68.) 760	A.) Torr
69.) 29.92	B.) in Hg
70.) 14.696	C.) kPa
71.) 76	D.) psia
72.) 101.325	E.) cm Hg

Match value of constants with units:

73.) 1 mole of an ideal gas at STP	A.) L torr/ mol K
74.) 0.0821	B.) 22.4 Liters
75.) 8.3145	C.) J/ mol K
76.) 62.364	D.) L atm/ mol K

77. What is the molar mass of ammonium ion?  
A. 11  
B. 17  
C. 34  
D. 18
78. What is the molar mass of chlorine gas?  
A. 80  
B. 160  
C. 71  
D. 35.45
79. What is the formula mass of lithium chloride?  
A. 23.45  
B. 58.45  
C. 42.45  
D. 74.45
80. What is the molar mass of propane,  $\text{C}_3\text{H}_8$ ?  
A. 30  
B. 44  
C. 58  
D. 72

81. How many total ions are in a solution when one mole of lithium chloride is dissolved in water?  
A.  $1.2 \times 10^{24}$   
B.  $1.8 \times 10^{24}$   
C.  $3.6 \times 10^{24}$
82. Iodide is a (an) \_\_\_\_\_.  
A. Anion  
B. Cation
83. Which element is an inert gas?  
A. Krypton  
B. Oxygen
84. What is the symbol for silver?  
A. Ag  
B. Na  
C. W  
D. Au
85. What is the symbol for manganese?  
A. Mn  
B. Mg
86. Which one of the following is diatomic?  
A. Iodine  
B. Sulfur
87. Which of the following is a liquid at room temperature and atmospheric pressure?  
A.  $\text{Br}_2$   
B. Hg
88. A chemist dissolves 60.0 grams of sodium hydroxide in two liters of water the molarity of the solution will be \_\_\_\_\_.  
A. 1.50 M  
B. 0.75 M
89. How many molecules are in 320.0 grams of bromine gas @ 50 degrees C?  
A.  $1.204 \times 10^{24}$   
B.  $6.022 \times 10^{23}$
90. Which one of the following is likely to form double bonds?  
A. B  
B. F  
C. N  
D. H
91. Calculate the speed of a iodine molecule @ 25 degrees C.  
(R for this problem is  $8.3145 \text{ Kg m}^2/\text{sec}^2 \text{ mol K}$ )  
A. 493 m/s  
B. 242 m/s  
C. 16 m/s  
D. 64 m/s

92. What is the volume occupied by 71g of chlorine gas at 25 degrees C and 14.696 psia?
- A. 5.14 L
  - B. 22.4 L
  - C. 24.5 L
  - D. 11.2 L
93. Which gas has the greatest density:  $C_2H_6$  or  $C_4H_{10}$ ?
- A.  $C_2H_6$
  - B.  $C_4H_{10}$
94. Oxygen 17 contains how many neutrons are in the nucleus?
- A. 18
  - B. 10
  - C. 9
  - D. 8
95. How many molecules of  $NH_4^+$  ions are in one mole of  $NH_4OH$ ?
- A.  $6.02 \times 10^{23}$
  - B.  $2.73 \times 10^{26}$
  - C.  $2.40 \times 10^{24}$
  - D.  $3.01 \times 10^{23}$
96. Give the balanced equation for combustion of methane.
- A.  $CH_4 + O_2 \rightarrow C O_2 + H_2 O$
  - B.  $CH_4 + 2O_2 \rightarrow C O_2 + 2H_2O$
  - C.  $H_4 + O_2 \rightarrow 2 H_2 O$
  - D.  $2H_4 + 2O_2 \rightarrow +4 H_2 O$
97. Nitrogen 14 contains how many neutrons are in the nucleus?
- A. 7
  - B. 8
  - C. 18
  - D. 26
98. What is the electron configuration of Ne?
- A.  $1s^2 2s^2 2p^5$
  - B.  $1s^2 2s^2 2p^6$
99. What is the electron configuration of an iron at ground state?
- A.  $[Ar] 3d^6$
  - B.  $[Ar] 4s^2 3d^6$
100. The shape of a ammonia molecule is?
- A. Trigonal Pyramidal
  - B. Tetrahedral

