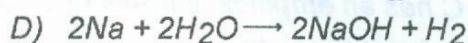
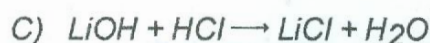
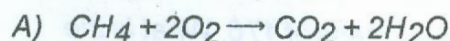
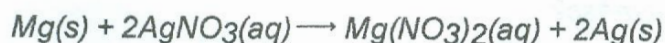


Name: \_\_\_\_\_

1) Which equation represents a double replacement reaction?



2) Given the reaction:



Which type of reaction is represented?

A) single replacement

C) decomposition

B) synthesis

D) double replacement

3) What is the correct IUPAC name for the compound  $\text{NH}_4\text{Cl}$ ?

A) nitrogen chloride

C) ammonium chloride

B) ammonium chlorate

D) nitrogen chlorate

4) Which formula correctly represents the composition of iron (III) oxide?

5) The percent by mass of hydrogen in  $\text{NH}_3$  is equal to

A)  $\frac{17}{1} \times 100$

B)  $\frac{17}{3} \times 100$

C)  $\frac{3}{17} \times 100$

D)  $\frac{1}{17} \times 100$

6) In which compound is the percent by mass of oxygen greatest?



7) A sample of a substance containing only magnesium and chlorine was tested in the laboratory and was found to be composed of 74.5% chlorine by mass. If the total mass of the sample was 190.2 grams, what was the mass of the magnesium?

A) 48.5 g

B) 142 g

C) 70.9 g

D) 24.3 g

8) What is the percent by mass of water in the hydrate  $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$  (formula mass = 286)?

A) 6.89%

B) 214.5%

C) 62.9%

D) 26.1%

9) A hydrate is a compound with water molecules incorporated into its crystal structure. In an experiment to find the percent by mass of water in a hydrated compound, the following data were recorded:

|   |            |
|---|------------|
| Mass of crucible + hydrated crystals before heating | 7.50 grams |
| Mass of crucible                                    | 6.90 grams |
| Mass of crucible + anhydrous crystals after heating | 7.20 grams |

What is the percent by mass of water in the hydrate?

A) 96.%

B) 72.%

C) 8.0%

D) 50.%

- 10) What is the empirical formula for the compound  $C_6H_{12}O_6$ ?  
 A)  $CH_2O$                       B)  $C_6H_{12}O_6$                       C)  $C_3H_6O_3$                       D)  $C_2H_4O_2$
- 11) Vitamin C has an empirical formula of  $C_3H_4O_3$  and a molecular mass of 176. What is the molecular formula of vitamin C?  
 A)  $C_9H_{12}O_9$                       B)  $C_{10}H_8O_3$                       C)  $C_6H_8O_6$                       D)  $C_3H_4O_3$
- 12) Which equation illustrates conservation of mass?  
 A)  $H_2 + Cl_2 \longrightarrow 2HCl$                       C)  $H_2 + O_2 \longrightarrow 2H_2O$   
 B)  $H_2 + Cl_2 \longrightarrow HCl$                       D)  $H_2 + O_2 \longrightarrow H_2O$

- 13) Given the unbalanced equation:



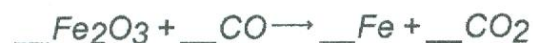
When the equation is balanced using the smallest whole-number coefficients, what is the coefficient of Al?

- A) 1                      B) 2                      C) 3                      D) 4
- 14) Given the unbalanced equation:



When this equation is completely balanced using smallest whole numbers, what is the sum of the coefficients?

- A) 4                      B) 7                      C) 9                      D) 5
- 15) Given the unbalanced equation:



When the equation is correctly balanced using the smallest whole-number coefficients, what is the coefficient of CO?

- A) 1                      B) 2                      C) 3                      D) 4
- 16) What is the gram formula mass of  $Ca_3(PO_4)_2$ ?  
 A) 135 g/mol                      B) 215 g/mol                      C) 310. g/mol                      D) 278 g/mol

- 17) Approximately how many atoms are there in 3.0 moles of Al?  
 A)  $3(6.0 \times 10^{23})$                       C)  $6.0 \times 10^{23}$   
 B)  $4(6.0 \times 10^{23})$                       D)  $2(6.0 \times 10^{23})$

- 18) What is the total number of moles of atoms in one mole of  $(NH_4)_2SO_4$ ?  
 A) 14                      B) 15                      C) 10                      D) 11

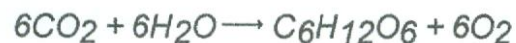
19) Given the equation:



How many moles of oxygen are required to react completely with 1.0 mole of  $\text{C}_2\text{H}_2$ ?

- A) 10                      B) 5.0                      C) 2.5                      D) 2.0

20) Given the reaction:



What is the total number of moles of water needed to make 2.5 moles of  $\text{C}_6\text{H}_{12}\text{O}_6$ ?

- A) 6.0                      B) 12                      C) 2.5                      D) 15