Chemistry
EOC Review 3: Moles Stoichometry

1. Which of the following is a binary compound?
   a. hydrogen sulfide
   b. hydrogen sulfate
   c. ammonium sulfide
   d. ammonium sulfate

2. What is the formula for sodium oxalate?
   a. NaClO
   b. Na_2ClO
   c. $Na_2C_2O_4$
   d. $NaC_2H_3O_2$

3. Given the unbalanced equation: $Al + O_2 = Al_2O_3$ When this equation is completely balanced using the smallest whole numbers, what is the sum of the coefficients?
   a. 9
   b. 7
   c. 5
   d. 4

4. What is the empirical formula of the compound whose molecular formula is P_4O_{10}?
   a. PO
   b. PO_2
   c. P_2O_5
   d. P_8O2_0

5. Which of the following is a binary compound?
   a. potassium chloride
   b. ammonium chloride
   c. potassium chlorate
   d. ammonium chlorate

6. Which is the correct formula for nitrogen (1) oxide?
   a. NO
   b. N_2O
   c. NO_2
   d. N_2O_3

7. What is the total number of atoms represented in the formula $CuSO_4 \cdot 5H_2O$?
   a. 8
   b. 13
   c. 21
   d. 27

8. What is the gram formula mass of K_2CO_3?
   a. 138 g
   b. 106 g

c. 99 g
d. 67 g

9. What is the total number of atoms contained in 2.00 moles of nickel?
   a. 58.9
   b. 118
   c. 6.02×10^{23}
   d. 1.2×10^{24}

10. What is the percent by mass of oxygen in magnesium oxide, MgO?
   a. 20%
   b. 40%
   c. 50%
   d. 60%

11. Which solution is the most concentrated?
   a. 1 mole of solute dissolved in 1 liter of solution?
   b. 2 moles of solute dissolved in 3 liters of solution?
   c. 6 moles of solute dissolved in 4 liters of solution?
   d. 4 moles of solute dissolved in 8 liters of solution?

12. What is the total number of moles of hydrogen gas contained in 9.03×10^{23}
   a. 1.5 moles
   b. 2.00 moles
   c. 6.02 moles
   d. 9.03 moles

13. A compound is 86% carbon and 14% hydrogen by mass. What is the empirical formula for this compound?
   a. CH
   b. CH_2
   c. CH_3
   d. CH_4

14. What is the total number of moles of H_2SO_4 needed to prepare 5.0 liters of a 2.0 M solution of H_2SO_4?
   a. 2.5
   b. 5.0
   c. 10
   d. 20

15. What is the mass in grams of 3.0×10^{23} molecules of CO_2?
   a. 22 g
   b. 44 g
   c. 66 g
   d. 88 g

16. What is the percent by mass of water in the hydrate $Na_2CO_3 * 10H_2O$ (formula mass = 286)?
   a. 6.89%
   b. 14.5%
   c. 26.1%

d. 62.9%

17. At STP, 32.0 liters of O_2 contain the same number of molecules as
    a. 22.4 L Ar
    b. 28.0 L of N_2
    c. 2. 0 L of H_2
    d. 44.8 L of He

18. What is the molarity of a KF (aq) solution containing 116 grams of KF in 1.00 liter of solution?
    a. 1.00 M
    b. 2.00 M
    c. 3.00 M
    d. 4.00 M

19. What is the gram formula mass of $(NH_4)_3PO_4$?
    a. 113 g
    b. 121 g
    c. 149 g
    d. 404 g

20. What is the empirical formula of a compound that contains 85% Ag and 15% F by mass?
    a. AgF
    b. Ag_2F
    c. AgF_2
    d. Ag_2F_2

21. Given the reaction $CH_4 + 20_2 \text{ --> } C0_2 + 2H_20$, What amount of oxygen is needed to completely react with 1 mole of CH_4?
    a. 2 moles
    b 2 atoms
    c. 2 grams
    d. 2 molecules