Name: _____ Date: _____

Practice Test 4

1. True or false? One atomic mass unit (amu) is the mass (in grams) of one mole of the substance.
   A) True   B) False

2. True or false? The formula of a compound that expresses the smallest whole-number ratio of the atoms present is called the empirical formula.
   A) True   B) False

3. 3.1 moles of oxygen atoms represent
   A) 1.0×10^2 g   D) 5.0×10^1 atoms
   B) 1.0 g   E) none of these
   C) 1.9×10^{24} atoms

4. What is the mass of 15 atoms of copper in grams?
   A) 63.5 g   D) 1.42×10^{23} g
   B) 2.49×10^{-23} g   E) 1.58×10^{-21} g
   C) 953 g

5. Calculate the mass of 21.7 moles of He.
   A) 25.7   B) 5.42   C) 1.31×10^{25} D) 86.9   E) 6.02×10^{23}

6. 3.67 moles of water weighs
   A) 2.04×10^{-1} g   B) 66.1 g   C) 4.91 g   D) 21.8 g   E) 71.8 g

7. 25.8 g of Cu represents how many moles?
   A) 1.64×10^3 mol   D) 1.55×10^{25} mol
   B) 2.46 mol   E) none of these
   C) 0.406 mol

8. 29.3 g of Ni represents how many atoms?
   A) 0.499 atoms   D) 2.86×10^{-21} atoms
   B) 1.76×10^{25} atoms   E) 3.01×10^{23} atoms
   C) 4.87×10^{-23} atoms

9. A sample containing 1.20 mol of zinc has a mass of _____ g.
   A) 1.84×10^{-2} B) 54.5   C) 78.5   D) 66.6   E) 7.23×10^{23}

10. A 2.46-mol sample of Zr represents how many atoms?
    A) 4.09×10^{-24} atoms   D) 1.35×10^{26} atoms
    B) 1.48×10^{24} atoms   E) 2.70×10^{-2} atoms
    C) 2.45×10^{23} atoms

11. A sample containing 0.382 mol of sodium has a mass of _____ g.
    A) 1.66×10^{-2} B) 6.02×10^{1} C) 23.372   D) 2.30×10^{23} E) 8.78

12. The molar mass of magnesium hydroxide, $Mg(OH)_2$ is
    A) 41.3 g/mol   B) 56.3 g/mol   C) 34.0 g/mol   D) 82.6 g/mol   E) 58.3 g/mol

13. 4.45 g of water contains how many molecules of water?
    A) 1.49×10^{23} B) 0.247   C) 2.44×10^{24} D) 2.68×10^{24} E) 1.35×10^{23}

14. Convert: 10.7 g CO = _____ molecules CO
    A) 6.44×10^{24} B) 4.98×10^{-22} C) 3.00×10^{2} D) 1.78×10^{-23} E) 2.30×10^{23}

15. Convert: 1.706 mol $Mg(NO_3)_2$ = _____ g $Mg(NO_3)_2$
    A) 253.1   B) 1.150×10^{-2} C) 86.95   D) 225.8   E) none of these

16. A 44.7-g sample of H_2O contains how many molecules of water?
    A) 2.69×10^{25} molecules   D) 1.34×10^{-21} molecules
    B) 8.05×10^{2} molecules   E) none of these
    C) 1.49×10^{24} molecules

17. True or false? The mole can be defined as the number equal to the number of oxygen atoms in 32.00 g of oxygen.
    A) True   B) False

18. Determine the percentage composition (by mass) of oxygen in NH_4NO_3.
    A) 72.68 %   B) 59.96 %   C) 19.99 %   D) 99.89 %   E) 33.30 %

19. Determine the percentage composition (by mass) of tin in SnF_2 to three significant figures.

 A) 96.2 %   B) 60.2 %   C) 86.2 %   D) 61.0 %   E) 75.7 %

20. The mass percent of hydrogen in NH_4Cl is

 A) 26.2 %   B) 2.00 %   C) 7.54 %   D) none of these

21. A compound contains 25.94% N and 74.06% O (by mass). What is the empirical formula?

22. Determine the empirical formula of a compound containing 54.2% F and 45.8% S (by mass).

23. A compound has 40.68% carbon, 5.12% hydrogen, and 54.20% oxygen (by mass). Calculate its empirical formula.

24. How many grams of F_2 are there in 2.38 mol F_2?

 A) 0.0626 g   B) 45.2 g   C) 16.0 g   D) 90.4 g   E) none of these

25. The number of grams in 3.54 mol of sodium carbonate is

 A) 29.9 g   B) 0.0334 g   C) 294. g   D) 375. g   E) none of these

Answer Key - Practice Test 4

1. False
2. True
3. C
4. E
5. D
6. B
7. C
8. E
9. C
10. B
11. E
12. E
13. A
14. E
15. A
16. C
17. False
18. B
19. E
20. C
21. N_2O_5
22. SF_2
23. $C_2H_3O_2$
24. D
25. D