Name: _____ Period: _____

Semester 1 Final Review Quiz: *Unit 6*

1. In the reaction $2CO(g) + O_2(g) \rightarrow 2CO_2(g)$, what is the ratio of moles of oxygen used to moles of CO_2 produced?
   a. 1:1
   b. 1:2
   c. 2:1
   d. 2:2
2. Calculate the number of moles of Al_2O_3 that are produced when 0.60 mol of Fe is produced in the following reaction. **$2Al(s) + 3FeO(s) \rightarrow 3Fe(s) + Al_2O_3(s)$**
   a. 0.20 mol Al_2O_3
   b. 0.40 mol Al_2O_3
   c. 0.60 mol Al_2O_3
   d. 0.90 mol Al_2O_3
3. Which conversion factor do you use first to calculate the number of grams of CO_2 produced by the reaction of 50.6 g of CH_4 with O_2? The equation for the complete combustion of methane is:

   $CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$

   a. 1 mol CH_4 /16.0 g CH_4
   b. 16.0 g CH_4 /1 mol CO_2
   c. 2 mol O_2 /1 mol CO_2
   d. 44.0 g CO_2 /2 mol CO_2
4. Which statement is true if 12 mol CO and 12 mol Fe_2O_3 are allowed to react?

   $3CO(g) + Fe_2O_3(s) \rightarrow 2Fe(s) + 3CO_2(g)$

   a. The limiting reagent is CO and 8.0 mol Fe will be formed.
   b. The limiting reagent is CO and 3.0 mol CO_2 will be formed.
   c. The limiting reagent is Fe_2O_3 and 24 mol Fe will be formed.
   d. The limiting reagent is Fe_2O_3 and 36 mol CO_2 will be formed.
5. How many significant figures does 2010 have?
   a. 1
   b. 2
   c. 3
   d. 4
6. Perform the following calculation and put into the correct number of significant figures: 4.52 – 7.8 + 10.314
   a. 7
   b. 7.0
   c. 7.03
   d. 7.034
7. What can be said about 1 mol Ag and 1 mol Au?
   a. They are equal in mass.
   b. They have the same atomic mass.
   c. They contain the same number of atoms.
   d. Their molar masses are equal.
8. What number represents the amount of atoms in a mole of any pure substance?
   a. Avogadro's number
   b. Its mass number
   c. Its gram-atomic number
   d. Its atomic number
9. The molecular formula for vitamin C is $C_6H_8O_6$. What is the empirical formula?
   a. CH_2O
   b. $C_3H_4O_3$
   c. $C_2H_4O_2$
   d. CHO
10. The actual yield of a product is _____.
    a. A negative number
    b. Independent of the reactants
    c. The same as its theoretical yield
    d. Measured experimentally
11. Calculate the percent yield if 410.0 grams of product (H_2SO_4) are formed in the lab. The stoichiometry calculation predicts that 450.0 grams of product should form.

    $SO_3 + H_2O \rightarrow H_2SO_4$

    a. 8.89%
    b. 9.76%
    c. 91.1%
    d. not enough information
12. What is the limiting reactant if you have 4.96 mol oxygen and 1.25 mol of hydrogen?

    O_2 + $2H_2$ → $2H_2O$

    4.96 mol 1.25 mol

    a. Oxygen
    b. Hydrogen
    c. Water
    d. Cannot be determined