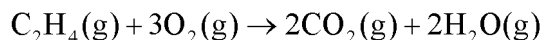


Name: \_\_\_\_\_ Date: \_\_\_\_\_

## Honors Chem Practice Test Unit 6

1. True or false? The equation  $\text{N}_2(\text{g}) + 3\text{H}_2(\text{g}) \rightarrow 2\text{NH}_3(\text{g})$  can be interpreted by saying that 1 mol of  $\text{N}_2$  reacts with 3 mol of  $\text{H}_2$  to form 2 mol of  $\text{NH}_3$ .  
A) True B) False
2. True or false? A balanced chemical equation is one that has the same number of moles of molecules on each side of the equation.  
A) True B) False
3. The balanced equation  $2\text{Cu}(\text{s}) + \text{O}_2(\text{g}) \rightarrow 2\text{CuO}(\text{s})$  tells us that 5.0 mol of Cu  
A) reacts with 5.0 mol of  $\text{O}_2$  D) cannot react with oxygen  
B) produces 5.0 mol of CuO E) produces 10.0 mol of CuO  
C) must react with 160 g of  $\text{O}_2$
4. For the reaction



if 6.0 mol of  $\text{CO}_2$  are produced, how many moles of  $\text{O}_2$  were reacted?

- A) 4.0 mol D) 15.0 mol  
B) 7.5 mol E) none of these  
C) 9.0 mol
5. True or false? A mole ratio is used to convert the moles of a starting substance to the moles of a desired substance.  
A) True B) False
  6. Refer to the following equation:  $4\text{NH}_3(\text{g}) + 7\text{O}_2(\text{g}) \rightarrow 4\text{NO}_2(\text{g}) + 6\text{H}_2\text{O}(\text{g})$

How many moles of ammonia will be required to produce 13.7 mol of water?

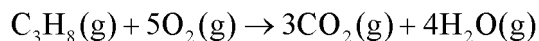
- A) 5.48 mol D) 6.85 mol  
B) 13.7 mol E) none of these  
C) 9.13 mol

7. Refer to the following equation:  $4\text{NH}_3(\text{g}) + 7\text{O}_2(\text{g}) \rightarrow 4\text{NO}_2(\text{g}) + 6\text{H}_2\text{O}(\text{g})$

How many molecules of  $\text{NO}_2$  are produced when 7.19 mol of ammonia is completely reacted?

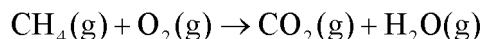
- A) 28.76
- B)  $8.66 \times 10^{24}$
- C)  $4.33 \times 10^{24}$
- D) 331
- E) none of these

8. How many molecules of carbon dioxide will be formed if 4.94 g of propane is burned in the following reaction?



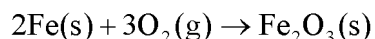
- A)  $8.92 \times 10^{24}$  molecules
- B)  $6.75 \times 10^{22}$  molecules
- C)  $2.70 \times 10^{23}$  molecules
- D)  $2.02 \times 10^{23}$  molecules
- E)  $3.37 \times 10^{23}$  molecules

9. Calculate the mass of water produced when 8.57 g of methane,  $\text{CH}_4$ , reacts with an excess of oxygen in the following **unbalanced** reaction.



- A) 9.62 g  $\text{H}_2\text{O}$
- B)  $3.09 \times 10^2$  g  $\text{H}_2\text{O}$
- C) 19.2 g  $\text{H}_2\text{O}$
- D) 0.476 g  $\text{H}_2\text{O}$
- E) 1.07 g  $\text{H}_2\text{O}$

10. Consider the reaction



If 12.7 g of iron(III) oxide (rust) is produced from a certain amount of iron, how many grams of oxygen are needed for this reaction?

- A) 3.82 g
- B) 7.63 g
- C) 1.70 g
- D) 2.54 g
- E) none of these

11. Methane,  $\text{CH}_4$ , the major component of natural gas, burns in air to form  $\text{CO}_2$  and  $\text{H}_2\text{O}$ . What mass of water is formed in the complete combustion of 3.39e3 g of  $\text{CH}_4$ ?

- A)  $1.22 \times 10^5$  g
- B)  $3.81 \times 10^3$  g
- C)  $1.14 \times 10^4$  g
- D)  $7.61 \times 10^3$  g
- E) none of these

12. How many moles of  $O_2$  are required for the complete reaction of 50.6 g of  $C_2H_4$  to form  $CO_2$  and  $H_2O$ ?

A) 0.902 mol  
B) 3.61 mol  
C) 7.22 mol  
D) 5.41 mol  
E) none of these

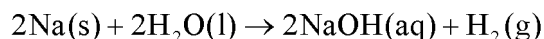
13. For the reaction



how many grams of  $NaCl$  can be produced from 22.5 g of  $Cl_2$  and excess  $NaOH$ ?

A) 27.8 g  $NaCl$   
B) 12.4 g  $NaCl$   
C) 18.5 g  $NaCl$   
D) 9.27 g  $NaCl$   
E) none of these

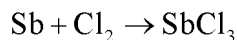
14. Sodium and water react according to the equation



What number of moles of  $H_2$  will be produced when 4.0 mol  $Na$  is added to 2.8 mol  $H_2O$ ?

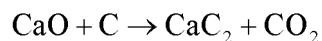
A) 1.4 mol      B) 5.6 mol      C) 2.0 mol      D) 2.8 mol      E) 8.0 mol

15. How many moles of  $SbCl_3$  is formed when 4.00 mol  $Sb$  are reacted with 4.70 mol  $Cl_2$  according to the unbalanced equation



A) 7.05 mol  $SbCl_3$   
B) 4.70 mol  $SbCl_3$   
C) 3.13 mol  $SbCl_3$   
D) 4.00 mol  $SbCl_3$   
E) Cannot be determined based on the information given.

16. Determine the mass of  $CO_2$  produced when 66.9 g of  $CaO$  is reacted with 50.0 g of  $C$  according to the unbalanced equation

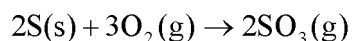


A) 26.3 g  $CO_2$   
B) 105 g  $CO_2$   
C) 52.5 g  $CO_2$   
D) 36.6 g  $CO_2$   
E) none of these

17. When  $\text{NH}_3$  is prepared from 28 g  $\text{N}_2$  and excess  $\text{H}_2$ , the theoretical yield of  $\text{NH}_3$  is 34 g. When this reaction is carried out in a given experiment, only 23 g is produced. What is the percentage yield? (Ignore significant figures for this problem.)
- A) 32%                      B) 45%                      C) 23%                      D) 34%                      E) 68%

18. In the reaction between  $\text{CO}$  and  $\text{Fe}_3\text{O}_4$ , the theoretical yield in an experiment is calculated to be 47.2 g Fe. When a careless chemistry student carries out the experiment, the actual yield is 34.4 g Fe. Calculate the percentage yield.
- A) 72.9%                      D) 36.4%  
B) 27.1%                      E) none of these  
C) 48.6%

19. For the reaction



if 4.78 g of S is reacted with 10.0 g of  $\text{O}_2$ , how many grams of  $\text{SO}_3$  will be produced?

- A) 23.9 g                      D) 11.9 g  
B) 5.97 g                      E) none of these  
C) 16.7 g
20. For the reaction of  $\text{C}_2\text{H}_4\text{(g)}$  with  $\text{O}_2\text{(g)}$  to form  $\text{CO}_2\text{(g)}$  and  $\text{H}_2\text{O(g)}$ , what number of moles of  $\text{CO}_2$  can be produced by the reaction of 0.480 mol  $\text{C}_2\text{H}_4$  and 1.00 mol  $\text{O}_2$ ?
- A) 1.50 mol                      D) 1.00 mol  
B) 0.960 mol                      E) none of these  
C) 0.667 mol

## **Answer Key - H\_Practice Test Unit 6**

1. True
2. False
3. B
4. C
5. True
6. C
7. C
8. D
9. C
10. B
11. D
12. D
13. A
14. A
15. C
16. A
17. E
18. A
19. D
20. C