

HOME WORK 9  
CHAPTER 9

Name \_\_\_\_\_

**MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.**

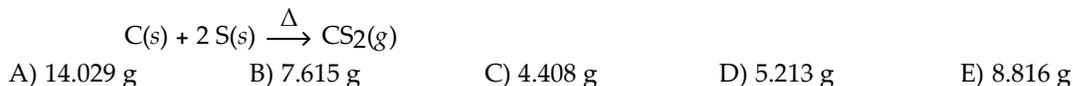
- 1) What term refers to the volume occupied by 1 mol of any gas at STP? 1) \_\_\_\_\_  
A) molar volume  
B) STP volume  
C) Avogadro's volume  
D) standard volume  
E) none of the above

- 2) What term refers to the mass of 1 mol of substance expressed in grams? 2) \_\_\_\_\_  
A) gram-formula mass  
B) molar mass  
C) gram-atomic mass  
D) gram-molecular mass  
E) none of the above

- 3) How many moles of carbon monoxide react with 1 mol of oxygen gas according to the balanced chemical equation? 3) \_\_\_\_\_  
$$2 \text{CO}(g) + \text{O}_2(g) \xrightarrow{\Delta} 2 \text{CO}_2(g)$$
  
A) 3 mol  
B) 2 mol  
C) 4 mol  
D) 1 mol  
E) none of the above

- 4) Assuming similar conditions, how many liters of steam, H<sub>2</sub>O, react to produce 1 L of hydrogen gas? 4) \_\_\_\_\_  
$$\text{C}(s) + \text{H}_2\text{O}(g) \xrightarrow{\Delta} \text{CO}(g) + \text{H}_2(g)$$
  
A) 4 L  
B) 3 L  
C) 2 L  
D) 1 L  
E) none of the above

- 5) In an experiment, 1.201 g of charcoal reacts with 6.414 g of powdered sulfur. Using the conservation of mass law, predict the mass of product. 5) \_\_\_\_\_



- 6) What is the mass of silver metal produced from 6.35 g of copper? 6) \_\_\_\_\_  
$$\text{Cu}(s) + \text{AgNO}_3(aq) \rightarrow \text{Cu}(\text{NO}_3)_2(aq) + \text{Ag}(s)$$
  
A) 1.08 g      B) 0.187 g      C) 0.747 g      D) 0.540 g      E) 21.6 g

- 7) What is the mass of insoluble lead(II) iodide (461.0 g/mol) produced from 0.830 g of potassium iodide (166.00 g/mol) and aqueous lead(II) nitrate? 7) \_\_\_\_\_  

$$\underline{\hspace{1cm}} \text{Pb}(\text{NO}_3)_2(\text{aq}) + \underline{\hspace{1cm}} \text{KI}(\text{s}) \rightarrow \underline{\hspace{1cm}} \text{PbI}_2(\text{s}) + \underline{\hspace{1cm}} \text{KNO}_3(\text{aq})$$
A) 1.15 g                      B) 0.598 g                      C) 2.31 g                      D) 0.149 g                      E) 4.61 g
- 8) What is the mass of aluminum metal that reacts to give 1.00 g of hydrogen gas? 8) \_\_\_\_\_  

$$\underline{\hspace{1cm}} \text{Al}(\text{s}) + \underline{\hspace{1cm}} \text{HCl}(\text{aq}) \rightarrow \underline{\hspace{1cm}} \text{AlCl}_3(\text{aq}) + \underline{\hspace{1cm}} \text{H}_2(\text{g})$$
A) 13.4 g                      B) 20.0 g                      C) 4.46 g                      D) 26.7 g                      E) 8.90 g
- 9) What is the mass of bismuth carbonate (597.99 g/mol) that decomposes to release 50.0mL of carbon dioxide gas at STP? 9) \_\_\_\_\_  

$$\underline{\hspace{1cm}} \text{Bi}_2(\text{CO}_3)_3(\text{s}) \xrightarrow{\Delta} \underline{\hspace{1cm}} \text{Bi}_2\text{O}_3(\text{s}) + \underline{\hspace{1cm}} \text{CO}_2(\text{g})$$
A) 1.33 g                      B) 4.00 g                      C) 0.00400 g                      D) 0.000445 g                      E) 0.445 g
- 10) What is the volume of hydrogen gas at STP released from 2.30 g of sodium metal and water? 10) \_\_\_\_\_  

$$\underline{\hspace{1cm}} \text{Na}(\text{s}) + \underline{\hspace{1cm}} \text{H}_2\text{O}(\text{l}) \rightarrow \underline{\hspace{1cm}} \text{NaOH}(\text{aq}) + \underline{\hspace{1cm}} \text{H}_2(\text{g})$$
A) 2.24 L                      B) 1.12 L                      C) 0.0500 L                      D) 0.100 L                      E) 4.48 L
- 11) Considering the limiting reactant concept, how many moles of C are produced from the reaction of 2.00 mol A and 4.50 mol B? 11) \_\_\_\_\_  

$$\text{A}(\text{g}) + 3 \text{B}(\text{g}) \rightarrow 2 \text{C}(\text{g})$$
A) 4.50 mol  
B) 2.00 mol  
C) 3.00 mol  
D) 4.00 mol  
E) none of the above
- 12) Starting with 1.550 g of potassium chlorate, a student releases 0.617 g of oxygen gas. If the calculated mass of oxygen gas is 0.607 g, what is the percent yield? 12) \_\_\_\_\_  
A) 98.4%                      B) 39.8%                      C) 255%                      D) 102%                      E) 39.2%
- 13) Considering the limiting reactant, what is the volume of the excess reactant that remains after the reaction of 25.0 mL of methane gas and 75.0 mL of oxygen gas? (Assume constant conditions.) 13) \_\_\_\_\_  

$$\text{CH}_4(\text{g}) + 2 \text{O}_2(\text{g}) \rightarrow \text{CO}_2(\text{g}) + 2 \text{H}_2\text{O}(\text{g})$$
A) 50.0 mL O<sub>2</sub>  
B) 25.0 mL O<sub>2</sub>  
C) 12.5 mL CH<sub>4</sub>  
D) 25.0 mL CH<sub>4</sub>  
E) none of the above
- 14) Considering the limiting reactant, what is the mass of iron produced from 75.0 g of iron(II) oxide (71.85 g/mol) and 25.0 g of magnesium metal? 14) \_\_\_\_\_  

$$\text{FeO}(\text{l}) + \text{Mg}(\text{l}) \xrightarrow{\Delta} \text{Fe}(\text{l}) + \text{MgO}(\text{s})$$
A) 57.4 g                      B) 29.1 g                      C) 100.0 g                      D) 28.7 g                      E) 58.3 g
- 15) Starting with 0.657 g of lead(II) nitrate, a student collects 0.925 g of precipitate. If the calculated mass of precipitate is 0.914 g, what is the percent yield? 15) \_\_\_\_\_  
A) 101%                      B) 71.9%                      C) 98.8%                      D) 139%                      E) 71.0%