

1. Define Stoichiometry. (1 point)
2. What are the conditions of STP? (2 points)
3. What is the molar volume of a gas at STP? (2 points)
4. According to the following balanced equation,  $6 \text{CO}_2 + 6 \text{H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6 \text{O}_2$ , how many grams of glucose ( $\text{C}_6\text{H}_{12}\text{O}_6$ ) can be produced from the reaction of 20.9 liters of carbon dioxide gas ( $\text{CO}_2$ ) at  $35^\circ\text{C}$  and 1.03 atm of pressure? (7 Points)
5. Using this balanced equation,  $\text{Mg}_3\text{N}_2 + 3 \text{H}_2\text{O} \rightarrow 3 \text{MgO} + 2\text{NH}_3$ , how many liters of ammonia gas ( $\text{NH}_3$ ) at  $25^\circ\text{C}$  and 1.5 atm of pressure can be produced from 1.89 liters of water ( $\text{H}_2\text{O}$ ) gas STP? (8 Points)

**Atomic and Molar Masses You MAY need for the above problems**

$\text{C}_6\text{H}_{12}\text{O}_6$ : 180 g = 1 mole  
 $\text{NH}_3$ : 17 g = 1 mole

$\text{CO}_2$ : 44.00 g = 1 mole  
 $\text{H}_2\text{O}$ : 18 g = 1 mole

6. According to the following balanced equation,  $6 \text{CO}_2 + 6 \text{H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6 \text{O}_2$ , how many grams of glucose ( $\text{C}_6\text{H}_{12}\text{O}_6$ ) can be produced from the reaction of 15.2 liters of water gas ( $\text{H}_2\text{O}$ ) at  $15^\circ\text{C}$  and 3.03 atm of pressure? (7 Points)

7. Using this balanced equation,  $\text{Mg}_3\text{N}_2 + 3 \text{H}_2\text{O} \rightarrow 3 \text{MgO} + 2\text{NH}_3$ , how many liters of ammonia gas ( $\text{NH}_3$ ) at  $0^\circ\text{C}$  and 1.5 atm of pressure can be produced from 115.5 grams of water ( $\text{H}_2\text{O}$ )? (8 Points)

**Atomic and Molar Masses You MAY need for the above problems**

$\text{C}_6\text{H}_{12}\text{O}_6$ : 180 g = 1 mole  
 $\text{NH}_3$ : 17 g = 1 mole

$\text{CO}_2$ : 44.00 g = 1 mole  
 $\text{H}_2\text{O}$ : 18 g = 1 mole