Chemistry 141 Name key

Dr. Cary Willard

Quiz 6a (20 points) October 12, 2010

All work must be shown to receive credit. PV=nRT, R=0.0821 L atm/mol K = 62.4 L torr/mol K

760 torr = 1.00 atm, STP 0oC and 1atm

1. (4 points) Methane gas, CH4, is sold in a 43.8 L cylinder with a pressure of 15.5 atm. How many liters of methane will be produced at a pressure of 735 torr?
2. (4 points) What is the density of carbon dioxide at 35.0oC and 650 torr?
3. (6 points) When 35.6 L of ammonia and 40.5 L of oxygen gas at STP burn, nitrogen monoxide and water are produced.

NH3(g) + O2(g) 🡪 NO(g) + H2O(g) (unbalanced)

After the products return to STP, how many L of nitrogen monoxide are produced?

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | X=8.9 |  | X=8.1 |  |  |  |  |
|  | 4 NH3 | + | 5 O2 | 🡪 | 4 NO | + | 6 H2O |
| I | 35.6 L |  | 40.5 L |  | 0 L |  | 1. L |
|  | -4x |  | -5x |  | + 4x |  | + 6x |
| E | 35.6-4xL |  | 40.5-5xL |  | 4xL |  | 6xL |
|  |  |  |  |  | =37.4L |  |  |

How many grams of nitrogen monoxide are produced?

1. (3 points) Which sample contains the most molecules: 1.00 L of O2 at STP, 1.00 L of air at STP, or 1.00 L of H2 at STP?

All the same

1. (3 points) Why does a helium filled balloon lose pressure faster than an air filled balloon?

More mass means slower

Less mass means faster

Lower mass He will leak faster!

Chemistry 141 Name key

Dr. Cary Willard

Quiz 6b (20 points) October 12, 2010

All work must be shown to receive credit. PV=nRT, R=0.0821 L atm/mol K = 62.4 L torr/mol K

760 torr = 1.00 atm, STP 0oC and 1atm

1. (4 points) Methane gas, CH4, is sold in a 43.8 L cylinder with a pressure of 17.7 atm. How many liters of methane will be produced at a pressure of 735 torr?
2. (4 points) What is the density of carbon dioxide at 45.0oC and 550 torr?
3. (6 points) When 45.6 L of ammonia and 30.5 L of oxygen gas at STP burn, nitrogen monoxide and water are produced.

NH3(g) + O2(g) 🡪 NO(g) + H2O(g) (unbalanced)

After the products return to STP, how many L of nitrogen monoxide are produced?

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | X=11.4 |  | X=6.1 |  |  |  |  |
|  | 4 NH3 | + | 5 O2 | 🡪 | 4 NO | + | 6 H2O |
| I | 45.6 L |  | 30.5 L |  | 0 L |  | 1. L |
|  | -4x |  | -5x |  | + 4x |  | + 6x |
| E | 45.6-4xL |  | 30.5-5xL |  | 4xL |  | 6xL |
|  |  |  |  |  | =24.4L |  |  |

How many grams of nitrogen monoxide are produced?

1. (3 points) Which sample contains the most molecules: 1.00 L of O2 at STP, 1.00 L of air at STP, or 1.00 L of H2 at STP?

All the same

1. (3 points) Why does a helium filled balloon lose pressure faster than an air filled balloon?

More mass means slower

Less mass means faster

Lower mass He will leak faster!