Chemistry 141 Name Key

Dr. Cary Willard

Quiz 5A (20 points) October 8, 2012

Data: R = 0.0821 L atm/mol K = 62.4 L torr/mol K, 1 atm = 760 torr = 760 mm Hg, K = oC+273.16

1. (5 points) A 0.982 g sample of an unknown gas exerts a pressure of 700.0 mm Hg in a 450.0 mL container at 23oC. What is the molar mass of the gas?
2. (5 points) Under constant pressure conditions a sample of hydrogen gas initially at 88oC and 9.6 L is cooled until its final volume is 3.4 L. What is its final temperature in oC?
3. (6 points) Oxygen masks use canisters containing potassium superoxide. The superoxide consumes the CO2 exhaled by a person and replaces it with oxygen.

4 KO2(s) + 2 CO2(g) ⎯→ 2 K2CO3(s) + 3 O2(g)

What mass of KO2, in grams is required to use up 8.90 L of CO2 at 22.0oC and 767 mmHg?

1. (4points) Why are gases so much more compressible than liquids and solids?

Because there is lots of empty space between the particles.

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Quiz 5B (20 points) October 8, 2012

Data: R = 0.0821 L atm/mol K = 62.4 L torr/mol K, 1 atm = 760 torr = 760 mm Hg, K = oC+273.16

1. (5 points) A 0.687 g sample of an unknown gas exerts a pressure of 700.0 mm Hg in a 450.0 mL container at 23oC. What is the molar mass of the gas?
2. (5 points) Under constant pressure conditions a sample of hydrogen gas initially at 43oC and 9.6 L is cooled until its final volume is 3.4 L. What is its final temperature in oC?
3. (6 points) Oxygen masks use canisters containing potassium superoxide. The superoxide consumes the CO2 exhaled by a person and replaces it with oxygen.

4 KO2(s) + 2 CO2(g) ⎯→ 2 K2CO3(s) + 3 O2(g)

What mass of KO2, in grams is required to use up 12.8 L of CO2 at 22.0oC and 767 mmHg?

1. (4points) Why are gases so much more compressible than liquids and solids?

Because there is lots of empty space between the particles.