Chemistry 141 Name

Dr. Cary Willard

Quiz 6A (20 points) March 3, 2009

Data: PV=nRT R = 62.4 L torr/mol K = 0.0821 L atm/mol K

1. (5 points) A certain amount of gas at 25oC and at a pressure of 0.800 atm is contained in a glass vessel. Suppose that the vessel can withstand a pressure of 2.00 atm. How high can n

P1 = 0.800 atm

P2 = 2.00 atm

T1= 25oC = 298 K

T2= ???

1. (5 points) Ozone molecules in the stratosphere absorb much of the harmful radiation from the sun. Typically, the temperature and pressure of ozone in the stratosphere are 250 K and 1.0 x 10-2 atm, respectively. How many ozone molecules are present in 1.0 L of air under these conditions?

P = 1.0 x 10-2 atm

T = 250 K

V = 1.0 L

R = 0.0821 L atm/mol K

1. (5 points) Consider the formation of nitrogen dioxide from nitric oxide and oxygen:

2 NO(g) + O2(g) 🡪 2 NO2(g)

If 9.0 L of NO are reacted with excess O2 at STP, what is the volume in liters of the NO2 produced?

1. (5 points)Calculate the density of hydrogen bromide (HBr) gas in grams per liter at 733 mmHg and 46oC.

P = 733 torr

T = 46oC = 319 K

R = 62.4 L torr/mol K

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Quiz 6B (20 points) March 3, 2009

Data: PV=nRT R = 62.4 L torr/mol K = 0.0821 L atm/mol K

1. (5 points) A certain amount of gas at 25oC and at a pressure of 0.800 atm is contained in a glass vessel. Suppose that the vessel can withstand a pressure of 3.00 atm. How high can you raise the temperature of the gas without bursting the vessel?

P1 = 0.800 atm

P2 = 3.00 atm

T1= 25oC = 298 K

T2= ???

1. (5 points) Ozone molecules in the stratosphere absorb much of the harmful radiation from the sun. Typically, the temperature and pressure of ozone in the stratosphere are 250 K and 1.0 x 10-2 atm, respectively. How many ozone molecules are present in 5.0 L of air under these conditions?

P = 1.0 x 10-2 atm

T = 250 K

V = 5.0 L

R = 0.0821 L atm/mol K

1. (5 points) Consider the formation of nitrogen dioxide from nitric oxide and oxygen:

2 NO(g) + O2(g) 🡪 2 NO2(g)

If 6.0 L of NO are reacted with excess O2 at STP, what is the volume in liters of the NO2 produced?

1. (5 points)Calculate the density of hydrogen bromide (HBr) gas in grams per liter at 877 mmHg and 46oC.

P = 877 torr

T = 46oC = 319 K

R = 62.4 L torr/mol K

22.6 L/mol