CH 222
Sample Quiz #2 Name: _____ Lab Section: _____

Be sure to show all work, use the correct number of significant figures, circle final answers and use correct units in all problems.

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1. Ammonia (NH_3) is synthesized through the combination of hydrogen and nitrogen gases. What mass of nitrogen gas must be reacted to create ammonia at 3.00 atm in a 2.50 L flask at 100. °C? *Hint:* write a balanced equation! (6 pts)

2. Calculate the density (g/L) of gaseous phosphorus pentachloride at STP to three significant figures. (5 pts)

3. What volume of O_2, measured at 44.3 °C and 766 mm Hg, will be produced by the decomposition of 4.27 g $NaClO_3$? (5 points)
   $2\ NaClO_3(s) \rightarrow 2\ NaCl(s) + 3\ O_2(g)$

4. The lid is tightly sealed on a rigid flask containing 3.50 L H_2 at 17.0 °C and 694 torr. If the flask is heated to 71 °C, what is the pressure in the flask in atm? (4 points)

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Answers

1. Ammonia (NH_3) is synthesized through the combination of hydrogen and nitrogen gases. What mass of nitrogen gas must be reacted to create ammonia at 3.00 atm in a 2.50 L flask at 100. °C? *Hint:* write a balanced equation! (6 pts)

   3.43 g

2. Calculate the density (g/L) of gaseous phosphorus pentachloride at STP to three significant figures. (5 pts)

   9.30 g/L

3. What volume of O_2, measured at 44.3 °C and 766 mm Hg, will be produced by the decomposition of 4.27 g $NaClO_3$? (5 points)
   $2\ NaClO_3(s) \rightarrow 2\ NaCl(s) + 3\ O_2(g)$

   V = 1.56 L

4. The lid is tightly sealed on a rigid flask containing 3.50 L H_2 at 17.0 °C and 694 torr. If the flask is heated to 71 °C, what is the pressure in the flask in atm? (4 points)

   P_2 = 1.08 atm *also: 823 torr*