CHEM 1211 Homework Chapter 10

1. The temperature inside a balloon is raised from 25.0 °C to 250.0 °C. If the volume of cold air was 10.0 L, what is the volume of hot air?
2. If 1.00 mole of a gas occupies 22.4 L at STP, what volume would 0.750 moles occupy?
3. Calculate the volume occupied by 637 g of SO2 (MM 64.07) at
6.08 × 103 mmHg and –23 °C.
4. A gas occupies 10.0 L at 3 atm and 27 °C. What volume will it occupy at standard conditions?
5. How many liters of O2 at STP can be made from the decomposition of 100.0 g of PbO2?
2 PbO2(s) → 2 PbO(s) + O2(g)
(PbO2  = 239.2, O2 = 32.00)
6. Calculate the density of N2 at 125 °C and 755 mmHg.
7. Calculate the molar mass of a gas with mass of 0.311 g that has a volume of 0.225 L at 55 °C and 886 mmHg.
8. 1.02 L of O2 is collected over water at 293 K with a total pressure of 755.2 mmHg. Find mass of O2.
9. Calculate the molar mass of a gas that effuses at a rate 0.462 times N2.
10. Calculate the rms velocity of O2 at 25 °C.