**HomeWork 15**

**Due Monday 11/7/16**

**Your name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_/6**

**NOTE: R=0.08206 atm L/K mol**

**1)An unknown gas can have one of six identities:**

**O2 N2 CO2 H2O SO2 H2**

**MW 32 28 44 18 64 2**

**A 1.0 gram sample of the gas occupies 1.00 L at 300 K and a pressure of 0.879 atm. Which gas are you working with and why (show work.)**

**\_\_\_\_\_\_ gas ID**

**2)A nitrogen oxide compound NxOy decomposes to form N2 and O2.**

**The possible choices for the compound are:**

**NO2🡪 ½ N2 + O2**

**NO 🡪 ½ N2 + ½ O2**

**N2O4 🡪 N2 + 2O2**

**The Ideal Gas fairy informs you that 1 mole of the mystery gas decomposes to N2 and O2 which then occupies 73.854 L at 1 atm and 300 K.**

**What is the identity of the original NxOy compound and why ? (show work)**

**\_\_\_\_\_\_\_ NxOy ID**

**3) A sample of an unknown SxOy compound initial occupies 22.4 L at 300 K and 1.099 atm. It can decompose to form one of three possible forms:**

**SO2 (g)🡪 S(g) + O2(g) SO3 (g) 🡪 S(g) + 3/2 O2(g) SO🡪 S(g) + ½ O2(g)**

**When it does decompose, the final products produce a new net pressure of 2.7475 atm in the same volume at the same temperature . What is the identity of the SxOy compound and why ? (Show work): Hint – how many moles of SxOy are present initially ?**

**\_\_\_\_\_\_=ID of SxOy**