

Quiz 2nd Half Chapter 5

1. I am going to perform the following reactions in a sealed container. Will the pressure in the container increase, decrease, or remain the same?

A. (2 pnts) $\text{CH}_4(\text{g}) + 2\text{O}_2(\text{g}) \rightarrow \text{CO}_2(\text{g}) + 2\text{H}_2\text{O}(\text{g})$ _____

B. (2 pnts) $2\text{H}_2(\text{g}) + \text{O}_2(\text{g}) \rightarrow 2\text{H}_2\text{O}(\text{g})$ _____

C. (2 pnts) $\text{CO}_2(\text{s}) \rightarrow \text{CO}_2(\text{g})$ _____

2. In class we learned that

$$u_{rms} = \sqrt{\frac{3RT}{M}}$$

A. (2 pnts) What is u_{rms} ?

B. (2 pnts) Calculate the u_{rms} for molecules of naphthalene (moth balls) with a molecular weight of 128.16 at 298.0°C. (Remember the correct units)

C. (2 pnts) Would you expect a higher or lower u_{rms} for H_2 gas at the same temperature?

3. (4 pnts) I have a gas with a density of .714 g/L at STP. What is the molar mass of this gas?

4. Are the following processes endothermic or exothermic?

A. (2 pnts) The formation of ice from liquid water? _____

B. (2 pnts) The formation of a solid from a gas? _____

C. (2 pnts) The reaction $2\text{N} \rightarrow \text{N}_2$? _____

5. I have an ice chest that has a volume of 360 L. I am going to put 5 kg of dry ice into the chest and seal it up tight with tape. Assume the ice chest is air tight and all the dry ice (solid CO_2) vaporizes.

A. (6 pnts) What is the total pressure inside the chest when I open it 3 days later? (Assume that the chest was filled with N_2 gas at 1 atm when you filled it with the solid CO_2)

B. (2 pnts) What is the mole fraction of N_2 gas in the chest when I open it?