

Name: _____

Date: _____

[5 pt] 1. Define each variable in the equation $PV=nRT$ and give the standard units for each.

[5 pt] 2. Based on the 4 laws discussed in class and/or the ideal gas law ($PV=nRT$) answer the following questions with either (Directly Proportional, Inversely Proportional, or Neither).

(a) Pressure and Volume are: 2(a) _____

(b) Volume and Temperature are: 2(b) _____

(c) Pressure and Temperature are: 2(c) _____

(d) Number of Moles and Pressure: 2(d) _____

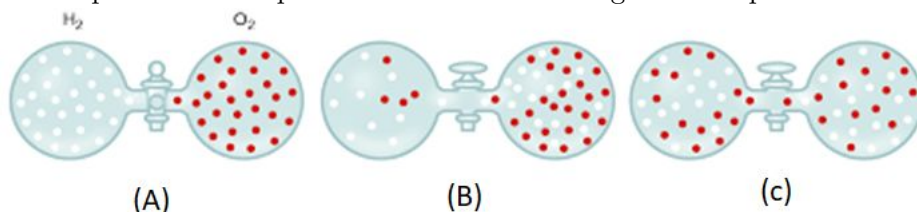
(e) Pressure and The Gas Constant (R): 2(e) _____

[3 pt] 3. What are the 6 principal assumptions of the Kinetic-Molecular theory of gases for "Ideal" Gases?

[3 pt] 4. Which 3 assumptions are **NOT** good assumptions for "Real" Gases

[4 pt] 5. Which picture best represents a mixture of two gasses? Explain.

5. _____



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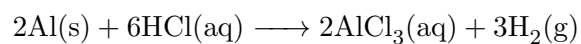
[5 pt] 6. How many mols of gas are in a 15.0 L container with a pressure of 660. mmHg at a temperature of 45.0 °C? 6. _____

[5 pt] 7. At what temperature (°C) will 25.2 mols of Xe gas occupy a volume of 645 L at a pressure of 732 torr? 7. _____

[5 pt] 8. How big of a balloon (in L) can you fill you have 15.0 mols of He gas at 25 °C at 100,000. Pa? 8. _____

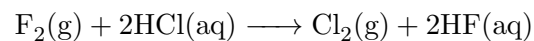
[5 pt] 9. A compressed air tank carried by scuba divers has a volume of 8.0 L and a pressure of 125 atm at 20. °C. What is the volume of air in the tank (in L) at sea-level, 1.0 atm, and 0.0 °C? 9. _____

[5 pt] 10. What volume of hydrogen gas at 30.0 °C and 700. torr will be formed by the reaction of 45.5 grams of Al with excess HCl? 10. _____

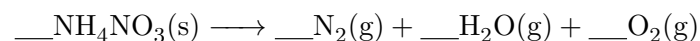


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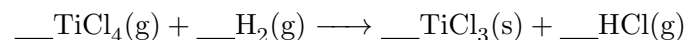
- [5 pt] 11. What volume of chlorine gas at 50.0 °C and 3.0 atm will be formed by the reaction of 125.0 grams of F₂ with excess HCl? _____



- [5 pt] 12. How many liters of gas (total, add them together) would be formed at 450 °C and 1.00 atm by the explosion of 450.0 grams of ammonium nitrate (NH₄NO₃)? _____



- [5 pt] 13. Using the following reaction, how many grams of TiCl₄ are needed for complete reaction with 155 L of H₂ gas at 435 °C and 795 mm Hg? _____



- [5 pt] 14. The reaction of sodium peroxide (Na₂O₂) with CO₂ is used in space vehicles to remove CO₂ from the air and generate air for breathing. If an astronaut requires 220. L of O₂ a day to survive, how many grams of CO₂ gas must be reacted in order to supply enough oxygen. Assume the space ship is at 1.0 atm of pressure at 25 °C. _____

