**Mr. Guch’s General Chemistry Final Exam - 2022**

1. How many grams are there in 27.5 grams of CH4? (3 pt)
2. Balance the following equations: (1 pt each)
   1. \_\_\_\_ LiF + \_\_\_\_ Na2SO4 → \_\_\_\_ Li2SO4 + \_\_\_\_ NaF
   2. \_\_\_\_ SO2 + \_\_\_\_ O2 → \_\_\_\_ SO3
3. Write the complete equation for the following reaction: (5 pt)

* When aluminum metal is added to a solution of tin (IV) chloride (Formula: SnCl­4) and an electric charge is added to it, tin metal and a solution of aluminum chloride (Formula: AlCl3)are formed. This reaction gives off a lot of heat.

1. What is the temperature of a gas at a that has a volume of 0.75 L and a pressure of 3.0 atm? R = 0.08206 L atm/mol K. (3 pt)
2. If I heat 4.0 liters of a gas at a pressure of 2.5 atm and a temperature of 23o C, what will the volume of the gas be if I increase the pressure to 2.0 atm and the temperature to 35o C? (3 pt)
3. Explain why it’s reasonable to assume that gas molecules don’t experience intermolecular forces. (3 pt)
4. What is the molarity of a solution that contains 0.025 grams of CH4 dissolved in 10.0 L of solution? (3 pt)
5. What is the molality of a solution formed by placing 0.025 grams of CH4 to 1.25 L of water? (3 pt)
6. What would the boiling point of the solution in problem 10 be? (Kb of water is 0.51 oC/m) (3 pt)

1. Define the following terms: (3 pt each)

* solute:
* kinetic molecular theory:
* aqueous: