Name: _____ Grade: _____ Date: _____

CHAPTER 11 REVIEW

Gases

SECTION 4: Diffusion and Effusion

1. _____ List the following gases in order of increasing rate of effusion. (Assume all gases are at the same temperature and pressure.)
   (a) He (b) Xe (c) HCl (d) Cl_2

2. Explain your reasoning for the order of gases you chose in item **1** above. Refer to the kinetic-molecular theory to support your explanation and cite Graham's law of effusion.

   _____

   _____

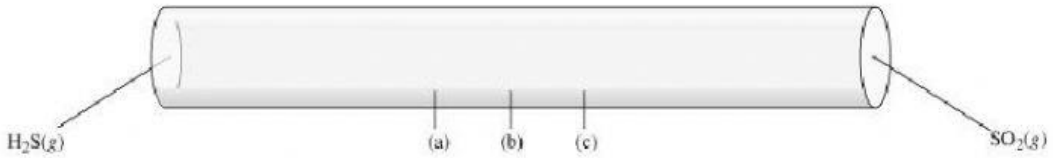
   _____

   _____

   _____

   _____

3. _____ The two gases in the figure below are simultaneously injected into opposite ends of the tube. At which labeled point should they just begin to mix?



4. State whether each example describes effusion or diffusion.

   _____ a. As a puncture occurs, air moves out of a bicycle tire.

   _____ b. When ammonia is spilled on the floor, the house begins to smell like ammonia.

   _____ c. The smell of car exhaust pervades an emissions testing station.

5. Describe what happens, in terms of diffusion, when a bottle of perfume is opened.

   _____

   _____

   _____

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6. _____ a. The molar masses of He and of HCl are 4.00 g/mol and 36.46 g/mol, respectively. What is the ratio of the mass of He to the mass of HCl rounded to one decimal place?

_____ b. Use your answer in part (a) to calculate the ratio of the average speed of He to the average speed of HCl.

_____ c. If helium's average speed is 1200 m/s, what is the average speed of HCl?

7. _____ An unknown gas effuses through an opening at a rate 3.16 times slower than neon gas. Estimate the molar mass of this unknown gas.

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