

CHM 101 EXAM III

Show all calculations with units and correct significant figures. Write in complete sentences! Turn in your take-home component with this exam. **Good Luck!!!!**

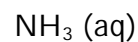
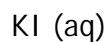
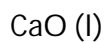
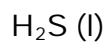
1. A bubble of CH_4 gas (0.045 mL) forms in the bottom of the ocean where the pressure is 5.0 atm and the temperature is 5.0°C . How many grams of CH_4 are in the bubble?

(20)

If the bubble escapes from the bottom and rises toward the surface where the pressure is 1.0 atm and the temperature is 30°C , what will happen to the bubble?

Why did the bubble rise in the water?

2. What IMF's are operating in the following substances? Electronegativities are attached. (10)



3. Why does CH_3OH have a higher boiling point than CH_3SH ? The carbon in both compounds is sp^3 hybridized. (6)

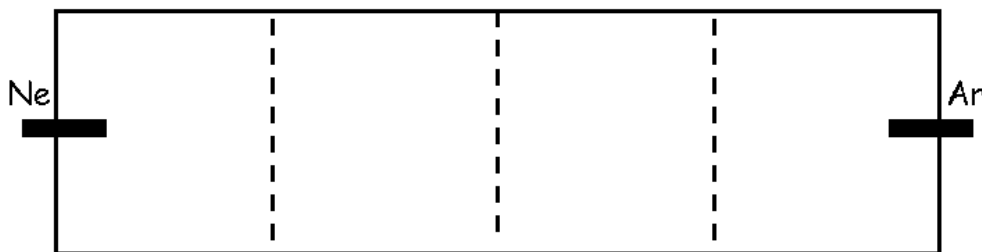
4. Complete the table below. Electronegativities are attached. Use an arrow to show the direction of electron migration. (20)

Molecule (Lewis dot structure)	Illustrate the Geometry including any lone pairs	Electron Migration	Polar or Non-polar Molecule
CH ₂ Cl ₂		C Cl C H	
SnCl ₂		Sn Cl	
PBr ₅		P Br	
XeF ₄			
BF ₃		B F	

5. Which gas Ne or Ar diffuses faster? Why?

(14)

If a small quantity of the two gases were introduced at the same time at opposite ends, sketch the approximate position where the two gases meet or really start to mix.



If the temperature decreased, what would be different? Does this change the meeting position of the gases in the tube above? Explain.

Illustrate the path of one atom of argon as it moved through the container above.

