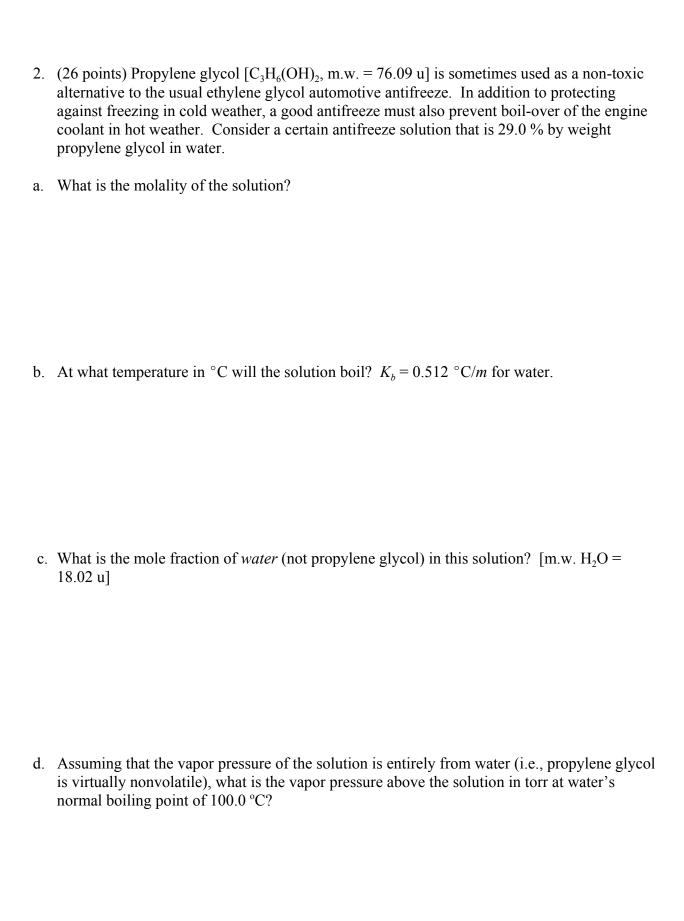
Chem 104 - Test 1 Practice Problems

1.	Circle the best answer to each of the following.					
a.	If c is a constant, the equation that is the basis for Avogadro's hypothesis is					
	V = c/P	V = cn	P = cT	KE = cT	V = cT	
b.	A gas sample initi the final pressure	•	is expanded at c	onstant temperati	ure from 50.0 L to	75.0 I
	3.33 atm	1.50 atm	1.00 atm	0.667 atm	0.200 atm	
c.	At STP a 14.3-g sample of gas occupies 5.00 L. What is its molecular weight?					
	2.86	14.3	22.4	64.1	112	
d.	In a gas mixture of He, Ne, and Ar with a total pressure of 8.40 atm, the partial pressures of He and Ne are 1.50 atm and 2.00 atm, respectively. What is the mole fraction of Ar in the mixture?					
	0.179	0.714	0.238	0.417	0.583	
e.	A 0.100-mole sample of oxygen gas (m.w. = 32.0) effused through a pin hole in 5.00 seconds. Under the same conditions, how long would it take the same amount of CO_2 (m.v = 44.0) to effuse?					
	1.17 s	3.64 s	4.26 s	5.86 s	6.88 s	
f.	Of the following gases, which would deviate most from ideal behavior?					
	$\mathrm{CH_4}$	CF_4	CCl ₄	CBr ₄	CI_4	
g.	Which of the follo	owing is <i>least</i> sol	uble in methano	l, CH ₃ OH?		
	SiO_2	H_2O	I_2	NaF	HF	
h.	Which of the follo	owing solutions v	would have the h	ighest osmotic p	ressure?	
	0.200 M HF 0.	$300 \text{ M C}_6\text{H}_{12}\text{O}_6$	0.100 M NaC	$0.100 \text{ M H}_2\text{S}$	O ₄ 0.100 M Na	$_{3}PO_{4}$
i.	Which of the follo	owing has the hig	thest boiling poi	nt?		
	CH ₃ CH ₂ CH ₃	CH ₃ OCH ₃	CH₃CHO HOO	CH ₂ CH ₂ CH ₂ OH	CH ₃ CH ₂ CH ₂ OH	[



3.	A 3.567-L sample of $CO_2(g)$ (m.w. = 44.01 u) is collected over water 35.40 °C. The pressure inside the vessel is 772.2 torr. At 35.40 °C the vapor pressure of water is 43.12 torr
a.	How many moles of $CO_2(g)$ does the sample contain?
h	What are the mole fractions of $CO_2(g)$ and $H_2O(g)$ in the sample?
υ.	what are the more fractions of $CO_2(g)$ and $H_2O(g)$ in the sample:
4.	A solution prepared by dissolving 0.525 g of an unknown non-electrolyte in enough water to make 125 mL of solution has an osmotic pressure of 1.10 atm at 27 °C. What is the molar mass of the solute?