

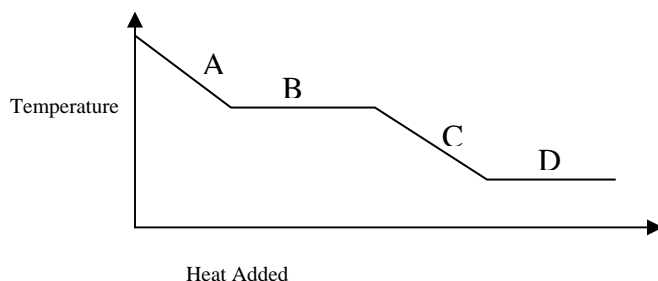
Name: _____

Chemistry 121
Fall 2005
Test 4 -- FORM A

Instructions: You have 50 minutes to complete this 100-point exam. You may use a simple scientific calculator. No programmable calculators allowed.

I. Multiple Choice (10 pts) Carefully and clearly circle the best answer.

- Which of the following molecules has the highest boiling point?
 - C_2H_2
 - C_2H_6
 - C_3H_8
 - C_6H_6
- What region is correctly labeled as the boiling point on the cooling curve below?



- Compounds with identical molecular formulas, but whose molecules have different structures are called:
 - organic.
 - inorganic.
 - isomers.
 - native.
- Which of the following is a false statement about proteins?
 - Some proteins extract energy.
 - Some proteins act as transport molecules.
 - All proteins hold genetic code.
 - All proteins are composed of amino acids.
- Which of the following gases will diffuse the quickest?
 - NH_3
 - HCl
 - H_2SO_4
 - SCl_3

II. Calculations, Functional Groups, Forces and Biochemicals Show all work. Partial credit will be given for correct work. If I cannot read the work, it will not be graded.

- (5 pts) A gas collected over water had a total pressure of 725 torr. Calculate the partial pressure of the gas (in torr) if the temperature was $10^\circ C$.

Temperature ($^\circ C$)	Vapor Pressure (torr)
0	4.579
5	6.543
10	9.209
15	12.79
20	17.54
25	23.76

10. (15 pts) What volume (in L) of gaseous PH_3 at 1.00 atm and 20°C could be formed by the reaction of 100.g of calcium phosphide with excess water? (MM of $\text{Ca}_3\text{P}_2 = 182.18 \text{ g/mol}$)



11. (10 pts) A sample of He occupies 600. mL at 27°C and 570. mm Hg. The volume is reduced to 450. mL and the sample cooled until the pressure is 380. mmHg. What is the final temperature in $^\circ\text{C}$?

12. (10 pts) What is the mole fraction of oxygen and mole percent of oxygen in a gaseous mixture if the partial pressure of oxygen is 545 mmHg and the total pressure of the mixture is 745 mmHg?

13. (10 pts) Answer **one** of the following essay questions in **5 – 6 GRAMMATICALLY CORRECT SENTENCES**.

- Describe the general structure of glycerophospholipids, the polarity of the molecule and the function in the cellular membrane.
- Describe the 3 main intermolecular forces and their relative strengths.

	IA																VIIIA															
1	1																	2														
	H																	He														
	1.008																	4.00														
2	3	4																	5	6	7	8	9	10								
	Li	Be																	B	C	N	O	F	Ne								
	6.94	9.01																	10.81	12.01	14.01	16.00	19.00	20.18								
3	11	12																	13	14	15	16	17	18								
	Na	Mg																	Al	Si	P	S	Cl	Ar								
	22.99	24.31																	26.98	28.09	30.97	32.06	35.45	39.95								
4	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36														
	K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr														
	39.10	40.08	44.96	47.90	50.94	52.00	54.94	55.85	58.93	58.71	63.55	65.37	69.72	72.59	74.92	78.96	79.90	83.80														
5	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54														
	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe														
	85.47	87.62	88.91	91.22	92.91	95.94	[98]	101.1	102.9	106.4	107.9	112.40	114.8	118.7	121.8	127.60	126.90	131.30														
6	55	56	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86														
	Cs	Ba	Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn														
	132.9	137.3	175	178.5	181	183.9	186.2	190.2	192.2	195.1	197	200.59	204.4	207.2	209	[209]	[210]	[222]														
7	87	88	103	104	105	106																										
	Fr	Ra	Lr																													
	[223]	[226]	[262]	[261]	[262]	[263]																										
57	58	59	60	61	62	63	64	65	66	67	68	69	70																			
La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb																			
138.9	140.1	140.9	144.2	[145]	150.4	152	157.3	158.9	162.5	164.93	167.3	168.9	173																			
89	90	91	92	93	94	95	96	97	98	99	100	101	102																			
Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No																			
[227]	232	[231]	238	[237]	[244]	[243]	[247]	[247]	[251]	[252]	[257]	[258]	[259]																			