

Test 1, Chemistry 121
Spring 2006

Name: _____

Instructions: You have 75 minutes to complete this 100-point exam. You may use a simple scientific calculator. No programmable calculators allowed.

I. Multiple Choice (10 pts) Circle the best answer.

- In a balanced chemical equation, what is balanced?
 - Atoms
 - Molecules
 - Density
 - Particles
- Which of the following elements has properties similar to iron?
 - Ti
 - Mn
 - Cu
 - Ru
- What is the formula of a compound of hydrogen and arsenic?
 - ArH₈
 - ArH₃
 - AsH₅
 - AsH₃
- How many significant figures are there in 0.0250900?
 - 3
 - 4
 - 6
 - 8
- A thermometer reads 58°C, what is this in Kelvin?
 - 215 K
 - 331 K
 - 215 K
 - 0 K

II. Chemical Formulas, Naming, Atomic Notation and the Periodic Table

6. (20 pts) Complete the table by placing symbols, formulas and names in the blanks.

Cation	Anion	Name	Formula
		ammonium bromide	
Mg ²⁺	PO ₄ ³⁻		
			NaC ₂ H ₃ O ₂
	Cr ₂ O ₇ ²⁻		Zn ₂ Cr ₂ O ₇

7. (20 pts) Name the following:

- ClF₃ _____
- NCl₃ _____
- TiSO₄ _____
- Ca(NO₃)₂ _____
- KI _____
- Al₂S₃ _____
- P₂O₅ _____
- (NH₄)₂SO₃ _____
- SiCl₄ _____
- SeO₂ _____

8. (10 pts) Fill in the blanks:

Symbol	Name	Protons	Neutrons	Electrons	Mass Number
Ni					58
		10	10		

9. (10 pts) Using chemical symbols, give examples of:

- a. An alkali metal _____
- b. A halogen _____
- c. A noble gas _____
- d. A transition metal _____
- e. A metalloid _____

III. Calculations: Partial credit will be given for correct work. If I cannot read the work, it will not be graded.

9. (10 pts) A red blood cell has a diameter of 7.5µm What is this in inches? (1 in = 0.00254 m)

10. (10 pts) How many liters are in 2.00 quarts of milk? (1 gal = 3.785 L, 4 quarts = 1 gal)

11. (10 pts) A cube of aluminum has a mass of 765 mg. What must be the volume of the cube if the density of aluminum is 2.70 g/mL?

IV. ESSAY QUESTION (worth 10 pts): In 4 – 6 grammatically correct sentences, describe the discovery of the proton.

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