Chem 1121
Spring 2012
Exam 1A

Name:_____

Please write your full name, and which exam version (1A) you have on the scantron sheet.

Multiple Choice. [3 points each.] Record your answers to the multiple choice questions on the scantron sheet.

Q1. Vaporization is the process where:
a) solid → liquid b) liquid → gas c) solid → gas d) gas → liquid e) liquid → solid

Q2. Which of the following is a chemical change:
a) water freezing b) alcohol evaporating c) iron rusting
d) salt dissolving in water e) benzene boiling

Q3. Which of the following substances is a compound:
a) aluminum b) beer c) saline d) water e) flour

Q4. The SI prefix meaning x 10^{-3}
a) micro b) mega c) milli d) centi e) deci

Q5. The element symbol Ca refers to:
a) Carbon b) Copper c) Californium d) Chlorine e) Calcium

Q6. The element symbol for potassium is:
a) P b) Po c) Pt d) Na e) K

Q7. Which of the following elements is a metalloid?
a) Na b) Zn c) As d) Cl e) He

Q8. The SI base unit for mass is the:
a) gram, g b) kilogram, kg c) pound, lb d) ounce, oz e) milligram, mg

Q9. What is the relationship between the milliliter and the liter?
a) 1000 L = 1 mL b) 1000 mL = 1 L c) 1 mL = 1 L d) 100 L = 1 mL e) 1 L = 100 mL

Q10. The number of neutrons in an atom of aluminum-20 is:
a) 7 b) 13 c) 20 e) 27 e) 33

Q11. Element 63, Europium (Eu) is an example of a(n):
a) Main group element b) Transition Metal c) Inner-Transition Metal
d) s-block element e) p-block element

Q12. Which element has the electron configuration of: 2-8-3?
a) Al b) C c) B d) Cl e) Sc

Q13. Positively charged ions are best called:
a) Atoms b) Cations c) Anions d) Polyatomic Ions e) Electrolytes

Q14. What is the charge on the common ion of magnesium?
a) 2+ b) 1+ c) 0 d) 1– e) 2–

Q15. What is the atomic weight of an element that consists of two isotopes: X-25 (relative abundance of 30.0 %) and X-28 (relative abundance of 70.0 %)?

a) 25.0 u b) 26.5 u c) 27.1 u d) 27.6 u e) 28.0 u

Short Response.

Show all work to receive credit. You must use the factor-label (conversion-factor) method for all conversions. Be sure to show all units and write your answers using the correct number of significant figures or decimal places.

Q16. [12 pts.] Calculate the following to the correct number of digits:

a) 10.232 – 1.19 = _____

b) 21.0928 ÷ 0.0302 = _____

c) $(2.10 \times 10^{12}) \times (3.0 \times 10^{-9})$ = _____

d) 123.10091 + 9.802 = _____

Q17. [12 pts.] Using the factor-label method, convert 2.3 furlongs/hogshead to miles/gallon, given the following exact conversions: 1 hogshead = 2 barrels, 1barrel = 3 ½ firkins, 1 firkin = 9 gallons, 8 furlongs = 1 mile.

Q18. [12 pts.] Write formulas for the following compounds:

a) sodium bromide _____

b) calcium nitride _____

c) iron(III) sulfide _____

d) potassium oxide _____

e) cuprous fluoride _____

Q19. [9 pts.] Name the following compounds:

a) $MgCl_2$ _____

b) Al_2O_3 _____

c) K_3N _____

Q20. [10 pts.] The density of human bones is about 1.52 g/cm^3. What volume would a 430 g bone sample occupy?

Periodic Table

1 IA												13 IIIA	14 IVA	15 VA	16 VIA	17 VIIA	18 VIIIA
1 **H** 1.01	2 IIA																2 **He** 4.00
3 **Li** 6.94	4 **Be** 9.01											5 **B** 10.81	6 **C** 12.01	7 **N** 14.01	8 **O** 16.00	9 **F** 19.00	10 **Ne** 20.18
11 **Na** 22.99	12 **Mg** 24.31	3 IIIB	4 IVB	5 VB	6 VIB	7 VIIB	8	9 VIIIB	10	11 IB	12 IIB	13 **Al** 26.98	14 **Si** 28.09	15 **P** 30.97	16 **S** 32.07	17 **Cl** 35.45	18 **Ar** 39.95
19 **K** 39.1	20 **Ca** 40.08	21 **Sc** 44.96	22 **Ti** 47.88	23 **V** 50.94	24 **Cr** 52.00	25 **Mn** 54.94	26 **Fe** 55.85	27 **Co** 58.93	28 **Ni** 58.69	29 **Cu** 63.55	30 **Zn** 65.39	31 **Ga** 69.72	32 **Ge** 72.61	33 **As** 74.92	34 **Se** 78.96	35 **Br** 79.90	36 **Kr** 83.80
37 **Rb** 85.47	38 **Sr** 87.62	39 **Y** 88.91	40 **Zr** 91.22	41 **Nb** 92.91	42 **Mo** 95.94	43 **Tc** (98)	44 **Ru** 101.07	45 **Rh** 102.91	46 **Pd** 106.42	47 **Ag** 107.87	48 **Cd** 112.41	49 **In** 114.82	50 **Sn** 118.71	51 **Sb** 121.76	52 **Te** 127.6	53 **I** 126.9	54 **Xe** 131.29
55 **Cs** 132.9	56 **Ba** 137.3	57 **La*** 138.9	72 **Hf** 178.5	73 **Ta** 180.9	74 **W** 183.9	75 **Re** 186.2	76 **Os** 190.2	77 **Ir** 192.2	78 **Pt** 195.1	79 **Au** 197.0	80 **Hg** 200.6	81 **Tl** 204.4	82 **Pb** 207.2	83 **Bi** 209	84 **Po** (209)	85 **At** (210)	86 **Rn** (222)
87 **Fr** (223)	88 **Ra** (226)	89 **Ac^** (227)	104 **Rf** (261)	105 **Db** (262)	106 **Sg** (263)	107 **Bh** (264)	108 **Hs** (265)	109 **Mt** (268)	110 **Ds** (271)	111 **Rg** (272)							

*	58 **Ce** 140.1	59 **Pr** 140.9	60 **Nd** 144.2	61 **Pm** (145)	62 **Sm** 150.4	63 **Eu** 152.0	64 **Gd** 157.3	65 **Tb** 158.9	66 **Dy** 162.5	67 **Ho** 164.9	68 **Er** 167.3	69 **Tm** 168.9	70 **Yb** 173.0	71 **Lu** 175.0
^	90 **Th** 232.0	91 **Pa** (231)	92 **U** 238.0	93 **Np** (237)	94 **Pu** (244)	95 **Am** (243)	96 **Cm** (247)	97 **Bk** (247)	98 **Cf** (251)	99 **Es** (252)	100 **Fm** (257)	101 **Md** (258)	102 **No** (259)	103 **Lr** (260)