Chem 1141
Fall 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. Which one of these is an example of a chemical property?

a) melting point b) density c) volume d) flammability e) mass

Q2. Which one of these is an example of an extensive property?

a) temperature b) boiling point c) melting point d) density e) volume

Q3. The base SI unit for mass is:

a) gram b) pound c) tonne d) liter e) kilogram

Q4. The SI prefix meaning $x10^{-9}$ is:

a) mega b) milli c) nano d) pico e) femto

Q5. The measurement 34.1 mL contains 3 significant figures. This means that the true measurement is in the range:

a) 34.0 – 34.2 mL b) 33.1 – 35.1 mL c) 34.0 – 34.1 mL d) 34.1 – 34.2 mL e) 34 – 35 mL

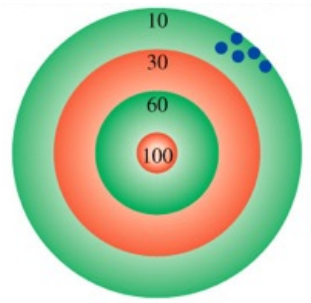
Q6. How many significant figures does the measurement 0.003020 mol contain?

a) 2 b) 3 c) 4 d) 6 e) 7

Q7. The correct result of the operation 34.0 – 25.0 is:

a) 9.00 b) 9.0 c) 9 d) 9.0×10^{-1} e) 9.0×10^{-2}

Q8. A chemist was throwing darts at a board, aiming for the bulls-eye (center). The following set of throws could be considered to be:



a) accurate and precise
b) accurate but not precise
c) not accurate but precise
d) not accurate and not precise
e) none of the above

Q9. The approximate size (diameter) of an atom is:

a) 1.0×10^{-15} m b) 1.0×10^{-10} m c) 1.0×10^{-5} m d) 1.0 m e) 1.0×10^{5} m

Q10. How many protons are contained in an atom of bromine-79?

a) 5 b) 11 c) 35 d) 79 e) 80

Q11. An example of a metalloid is:

a) silicon b) sulfur c) xenon d) uranium e) cesium

Q12. Which of these elements exists as a diatomic molecule in nature?

a) lithium b) titanium c) iodine d) phosphorus e) argon

Q13. How many electrons are in the Al^{3+} ion?

a) 10 b) 13 c) 16 d) 25 e) 28

Q14. What is the correct name for $CuSO_4$?

a) copper monosulfate b) copper sulfate c) copper(I) sulfate
d) copper(II) sulfate e) cuprous sulfate

Q15. What is the correct formula for methane?

a) NH_3 b) PH_3 c) CH_4 d) H_2SO_4 e) HCl

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.] Convert a concentration of 0.31 $\mu g/cm^3$ to units of mg/in^3.

Note: 1 in = 2.54 cm exactly.

Q17. [6 pts.] Compute the following to the correct number of significant figures / decimal places:

a) 0.021 x 13.1 = _____

b) 12.33 – 11.23 = _____

Q18. [6 pts.] Gold has a density of 19.3 g/cm^3. What mass of gold would have a volume of 42.0 cm^3?

Q19. [10 pts.] Write formulas for the following compounds:

a) trisulfur heptafluoride _____

b) lead(IV) sulfate _____

c) sodium acetate _____

d) magnesium nitrite _____

e) pentanitrogen decoxide _____

Q20. [10 pts.] Name the following compounds:

a) $MgCO_3$ _____

b) P_2N_8 _____

c) $Fe(HCO_3)_3$ _____

d) $Ca_3(PO_4)_2 \cdot 4H_2O$ _____

e) Cl_3I_9 _____

Q21. [4 pts.] What is the empirical formula of $C_6H_3Cl_3$?

Q22. [7 pts.] How many protons, neutrons, and electrons are there in the common ION of bromine-81?

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)