

Quiz 1A
CHEM 1141
Fall 2012

Name: _____

Q1. [0.5 pt. ea.] Fill in the blanks:

Quantity	Name of Unit	Symbol of Unit
mass		
	second	
		A

Q2. [0.5 pt. ea.] Fill in the blanks:

Element Name	Element Symbol
lead	
carbon	
	Hg
	Sn

Q3. [1 pt. ea.] Fill in the blanks:

SI Prefix	Meaning
	$\times 10^{-9}$
c	
m	

Q4. [2 pts.] What volume of mercury has a mass of 1.91 g?
The density of mercury is 13.6 g/mL. **SHOW ALL WORK.**

Quiz 2A

Chemistry 1141

Fall 2012

Name: _____

Q1. [1 pt. ea.] Compute the following to the correct number of significant figures/decimal places:

a) $3.50 \times 12.00 =$

b) $12.920 - 11.420 =$

Q2. [2 pts.] Using the conversion-factor method, convert an area of 3.4 in² to cm².

Note: 1 in = 2.54 cm (exactly). *Show ALL work!*

Q3. [2 pts.] What are the horizontal rows on the periodic table called?

Q4. [2 pts.] Name the following ionic compounds:



Q5. [0.5 pts. ea.] Write out the formulas of the following ions:

- a) sulfate _____
- b) ferric _____
- c) nitrate _____
- d) oxide _____

Periodic Table

	1	IA	2	IIA	3	4	5	6	7	8	9	VIIIB	2	He																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
1	H	1.01	Be	9.01	Li	6.94	Mg	24.31	Na	22.99	K	39.1	Ca	40.08	Sc	44.96	Ti	47.88	V	50.94	Cr	52.00	Mn	54.94	Fe	55.85	Co	58.93	Ni	58.69	Cu	63.55	Zn	65.39	Ga	69.72	Ge	72.61	As	74.92	Se	78.96	Br	79.90	Kr	83.80																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
11	Rb	87.62	Sr	85.47	Y	39.1	Zr	91.22	Nb	88.91	Tc	37	Mo	95.94	W	74	Re	75	Ta	73	Hf	57	La*	137.3	Cs	132.9	Ba	138.9	Db	106	Sg	107	Bh	108	Os	76	Pt	77	Ir	79	Au	80	Hg	81	Pb	82	Tl	83	Bi	84	Po	85	At	86	Rn	131.29																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
19	Ar	36	Kr	33	Xe	31	Rn	29	Br	28	Te	27	At	26	Cl	25	Se	24	Br	23	Cr	21	Sc	20	Ca	19	Sc	18	Ca	17	Cl	16	Br	15	Te	14	Br	13	Cl	12	Br	11	Te	10	Br	9	Cl	8	Br	7	Te	6	Br	5	Cl	4	Br	3	Te	2	Br	1	Cl	0	Br	18	VIIIA																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
87	Rn	(222)	Fr	(226)	Ac ⁺	(227)	Ra	(226)	Rf	(261)	Db	(262)	Db	(265)	Sg	(263)	Bh	(264)	Hs	(265)	Mt	(268)	Ds	(271)	Rg	(272)	Ds	(268)	Hs	(265)	Bh	(264)	Hs	(263)	Db	(262)	Sg	(261)	Bh	(260)	Hs	(259)	Mt	(258)	Ds	(257)	Rg	(256)	Ds	(255)	Hs	(254)	Bh	(253)	Hs	(252)	Db	(251)	Sg	(250)	Bh	(249)	Hs	(248)	Mt	(247)	Ds	(246)	Rg	(245)	Ds	(244)	Hs	(243)	Bh	(242)	Hs	(241)	Db	(240)	Sg	(239)	Bh	(238)	Hs	(237)	Mt	(236)	Ds	(235)	Rg	(234)	Ds	(233)	Hs	(232)	Bh	(231)	Hs	(230)	Db	(229)	Sg	(228)	Bh	(227)	Hs	(226)	Mt	(225)	Ds	(224)	Rg	(223)	Ds	(222)	Hs	(221)	Bh	(220)	Hs	(219)	Db	(218)	Sg	(217)	Bh	(216)	Hs	(215)	Mt	(214)	Ds	(213)	Rg	(212)	Ds	(211)	Hs	(210)	Bh	(209)	Hs	(208)	Db	(207)	Sg	(206)	Bh	(205)	Hs	(204)	Mt	(203)	Ds	(202)	Rg	(201)	Ds	(200)	Hs	(199)	Bh	(198)	Hs	(197)	Db	(196)	Sg	(195)	Bh	(194)	Hs	(193)	Mt	(192)	Ds	(191)	Rg	(190)	Ds	(189)	Hs	(188)	Bh	(187)	Hs	(186)	Db	(185)	Sg	(184)	Bh	(183)	Hs	(182)	Mt	(181)	Ds	(180)	Rg	(179)	Ds	(178)	Hs	(177)	Bh	(176)	Hs	(175)	Db	(174)	Sg	(173)	Bh	(172)	Hs	(171)	Mt	(170)	Ds	(169)	Rg	(168)	Ds	(167)	Hs	(166)	Bh	(165)	Hs	(164)	Db	(163)	Sg	(162)	Bh	(161)	Hs	(160)	Mt	(159)	Ds	(158)	Rg	(157)	Ds	(156)	Hs	(155)	Bh	(154)	Hs	(153)	Db	(152)	Sg	(151)	Bh	(150)	Hs	(149)	Mt	(148)	Ds	(147)	Rg	(146)	Ds	(145)	Hs	(144)	Bh	(143)	Hs	(142)	Db	(141)	Sg	(140)	Bh	(139)	Hs	(138)	Mt	(137)	Ds	(136)	Rg	(135)	Ds	(134)	Hs	(133)	Bh	(132)	Hs	(131)	Db	(130)	Sg	(129)	Bh	(128)	Hs	(127)	Mt	(126)	Ds	(125)	Rg	(124)	Ds	(123)	Hs	(122)	Bh	(121)	Hs	(120)	Db	(119)	Sg	(118)	Bh	(117)	Hs	(116)	Mt	(115)	Ds	(114)	Rg	(113)	Ds	(112)	Hs	(111)	Bh	(110)	Hs	(109)	Db	(108)	Sg	(107)	Bh	(106)	Hs	(105)	Mt	(104)	Ds	(103)	Rg	(102)	Ds	(101)	Hs	(100)	Bh	(99)	Hs	(98)	Db	(97)	Sg	(96)	Bh	(95)	Hs	(94)	Mt	(93)	Ds	(92)	Rg	(91)	Ds	(90)	Hs	(89)	Bh	(88)	Hs	(87)	Db	(86)	Sg	(85)	Bh	(84)	Hs	(83)	Mt	(82)	Ds	(81)	Rg	(80)	Ds	(79)	Hs	(78)	Bh	(77)	Hs	(76)	Db	(75)	Sg	(74)	Bh	(73)	Hs	(72)	Mt	(71)	Ds	(70)	Rg	(69)	Ds	(68)	Hs	(67)	Bh	(66)	Hs	(65)	Db	(64)	Sg	(63)	Bh	(62)	Hs	(61)	Mt	(60)	Ds	(59)	Rg	(58)	Ds	(57)	Hs	(56)	Bh	(55)	Hs	(54)	Db	(53)	Sg	(52)	Bh	(51)	Hs	(50)	Mt	(49)	Ds	(48)	Rg	(47)	Ds	(46)	Hs	(45)	Bh	(44)	Hs	(43)	Db	(42)	Sg	(41)	Bh	(40)	Hs	(39)	Mt	(38)	Ds	(37)	Rg	(36)	Ds	(35)	Hs	(34)	Bh	(33)	Hs	(32)	Db	(31)	Sg	(30)	Bh	(29)	Hs	(28)	Mt	(27)	Ds	(26)	Rg	(25)	Ds	(24)	Hs	(23)	Bh	(22)	Hs	(21)	Db	(20)	Sg	(19)	Bh	(18)	Hs	(17)	Mt	(16)	Ds	(15)	Rg	(14)	Ds	(13)	Hs	(12)	Bh	(11)	Hs	(10)	Db	(9)	Sg	(8)	Bh	(7)	Hs	(6)	Mt	(5)	Ds	(4)	Rg	(3)	Ds	(2)	Hs	(1)	Bh	(0)	Hs	(18)	VIIIA

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

Quiz 3A

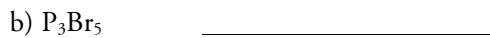
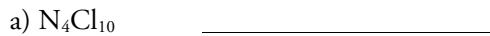
Chemistry 1141

Fall 2012

Name: _____

9/17/2012

Q1. [1 pt. ea.] Name the following molecular compounds:



Q2. [1 pt.] Give the systematic name the following compound:



Q3. [1 pt.] How is the **atomic mass unit** defined?

Q4. [3 pts.] How many moles of CCl_4 are there in a 21.0 g sample?

Show ALL work. You must use the conversion-factor method to receive credit.



Q5. [3 pts.] Element X is composed of two isotopes: X-76 and X-79. Using the data in the table below, calculate its (average) atomic mass. Show ALL work.

Isotope	Mass / u	Relative Abundance / %
X-76	75.904	82.1
X-79	78.890	17.9

Periodic Table

1	IA	2	IIA
1	H	1.01	4
3	Li	6.94	Be
11	Na	22.99	9.01
19	K	39.1	12
37	Rb	85.47	Mg
55	Cs	132.9	24.31
87	Fr	87	20
			Ca
			40.08
			Sr
			87.62
			Ba
			137.3
			Ra
			(226)

		VIIIA		18		VIIIA		2		He		
		13		14		15		16		17		
		IIIA		IVIA		VA		VIA		VIIA		
		B 10.81	C 12.01	N 14.01	O 16.00	F 19.00		F 19.00		Ne 20.18		
5	6	VIIIB 50.94	Cr 52.00	Mn 54.94	Fe 55.85	Co 58.93	Ni 58.69	Cu 63.55	Zn 65.39	Ga 69.72	Ge 72.61	As 74.92
5	6	VIIIB 50.94	Tc 42	Ru 43	Rh 44	Pd 45	Ag 46	Cd 47	In 48	Sn 49	Sb 50	Te 51
73	74	Ta 180.9	W 183.9	Re 186.2	Os 190.2	Ir 192.2	Pt 195.1	Au 197.0	Hg 200.6	Tl 204.4	Bi 207.2	Po 209
105	106	Dh (262)	Sg (263)	Bh (264)	Hs (265)	Mt (268)	Ds (271)	Rg (272)			At (210)	Rn (222)

	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Lr
*	58 140.1	59 140.9	60 144.2	61 (145)	62 150.4	63 152.0	64 157.3	65 158.9	66 162.5	67 164.9	68 167.3	69 168.9	70 173.0	71 175.0	103 (259)
	90 (23)	91 (23)	92 (23)	93 (23)	94 (244)	95 (243)	96 (243)	97 (247)	98 (247)	99 (251)	100 (252)	101 (257)	102 (258)	No (258)	103 (260)
\wedge	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	Md	No	Lr

Quiz 4A

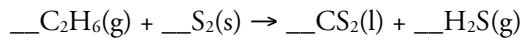
Chemistry 1141

Fall 2012

Name: _____

9/24/2012

Q1. [2 pts.] Balance the following chemical equation using the lowest set of whole number coefficients:



Q2. [6 pts.] Using the balanced chemical equation from Q1, what mass of CS₂ can be formed from the reaction between 10.0 g of C₂H₆ and 10.0 g of S₂?

Q3. [2 pts.] What is the percent yield of this reaction if 2.40 g of CS₂ was formed?



"IT WAS INEVITABLE. THEY WERE CHEMISTRY PARTNERS."

Periodic Table

	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Lr
*	58 140.1	59 140.9	60 144.2	61 (145)	62 150.4	63 152.0	64 157.3	65 158.9	66 162.5	67 164.9	68 167.3	69 168.9	70 173.0	71 175.0	103 (259)
	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 (258)	103 Lr (260)	

Quiz 5A

Chemistry 1141

Fall 2012

Name: _____

10/1/2012

Q1. [2 pts.] What is the Arrhenius definition of an acid?

Q2. [2 pts.] Predict whether the following compounds will be **soluble** or **insoluble** in water:

a) NH_4NO_3 _____

b) Fe_2S_3 _____

c) $\text{Pb}(\text{OH})_2$ _____

d) AgBr _____

Q3. [2 pts.] Write out the full-ionic equation given the following molecular equation:



FULL IONIC:

Q4. [2 pts.] What does the term “**triprotic acid**” mean?

Q5. [2 pts.] What does it mean when a substance is **oxidized**?

Periodic Table

1 IA H 1.01	2 IIA Be 9.01											13 IIIA B 10.81	14 IVA C 12.01	15 VA N 14.01	16 VIA O 16.00	17 VIIA F 19.00	18 VIIIA He 4.00
3 Li 6.94	4 Mg 24.31	3 IIIIB Sc 44.96	4 IVB Ti 47.88	5 VB V 50.94	6 VIIB Cr 52.00	7 VIIIB Mn 54.94	8 VIIIIB Fe 55.85	9 VIIIB Co 58.93	10 VIIIB Ni 58.69	11 IIB Cu 63.55	12 IIB Zn 65.39	13 III Al 26.98	14 IV Si 28.09	15 V P 30.97	16 VI S 32.07	17 VII Cl 35.45	18 VIIIA Ar 39.95
11 Na 22.99	12 Mg 24.31	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
19 K 39.1	20 Ca 40.08	39 Sc 44.96	40 Ti 47.88	41 V 50.94	42 Cr 52.00	43 Mn 54.94	44 Fe 55.85	45 Co 58.93	46 Ni 58.69	47 Cu 63.55	48 Zn 65.39	49 Al 26.98	50 Si 28.09	51 P 30.97	52 S 32.07	53 Cl 35.45	54 Ar 39.95
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)			

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Table 4.2 Solubility Rules for Common Ionic Compounds in Water at 25°C

Soluble Compounds		Insoluble Exceptions	
Compounds containing alkali metal ions (Li^+ , Na^+ , K^+ , Rb^+ , Cs^+) and the ammonium ion (NH_4^+)			
Nitrates (NO_3^-), bicarbonates (HCO_3^-), and chlorates (ClO_3^-)			
Halides (Cl^- , Br^- , I^-)		Halides of Ag^+ , Hg_2^{2+} , and Pb^{2+}	
Sulfates (SO_4^{2-})		Sulfates of Ag^+ , Ca^{2+} , Sr^{2+} , Ba^{2+} , Hg_2^{2+} , and Pb^{2+}	
Insoluble Compounds		Soluble Exceptions	
Carbonates (CO_3^{2-}), phosphates (PO_4^{3-}), chromates (CrO_4^{2-}), and sulfides (S^{2-})		Compounds containing alkali metal ions and the ammonium ion	
Hydroxides (OH^-)		Compounds containing alkali metal ions and the Ba^{2+} ion	

Quiz 6A

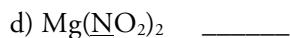
Chemistry 1141

Fall 2012

Name: _____

10/8/2012

Q1. [2 pts.] Assign an oxidation number to the underlined atom in each compound:



Q2. [2 pts] How many moles of CaCl_2 are in 25.00 mL of 3.400 M CaCl_2 (aq)?

Show all work. You must use the conversion-factor method to receive credit.

Q3. [4 pts.] 35.0 mL of water is added to 25.0 mL of 15.0 M HNO_3 (aq). Assuming the volumes are additive, what is the final concentration of the HNO_3 ?

Q4. [2 pts.] Circle the elements that are gases at 25 °C and 1 atm:

a) hydrogen
e) bromine

b) lithium
f) chlorine

c) nitrogen
g) neon

d) calcium
h) iodine

Periodic Table

1 IA																		18 VIIA																																					
1 H 1.01	2 IIA																	2 He 4.00																																					
3 Li 6.94	4 Be 9.01																																																						
11 Na 22.99	12 Mg 24.31	3 IIIIB	4 IVB	5 VB	6 VIB	7 VIIIB	8 VIIIB	9 VIIIB	10 IB	11 IB	12 IIB	13 IIIA	14 IVA	15 VA	16 VIA	17 VIIA																																							
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)																																													
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%;">*</td> <td>58 Ce 140.1</td> <td>59 Pr 140.9</td> <td>60 Nd 144.2</td> <td>61 Pm (145)</td> <td>62 Sm 150.4</td> <td>63 Eu 152.0</td> <td>64 Gd 157.3</td> <td>65 Tb 158.9</td> <td>66 Dy 162.5</td> <td>67 Ho 164.9</td> <td>68 Er 167.3</td> <td>69 Tm 168.9</td> <td>70 Yb 173.0</td> <td>71 Lu 175.0</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>^</td> <td>90 Th 232.0</td> <td>91 Pa (231)</td> <td>92 U 238.0</td> <td>93 Np (237)</td> <td>94 Pu (244)</td> <td>95 Am (243)</td> <td>96 Cm (247)</td> <td>97 Bk (247)</td> <td>98 Cf (251)</td> <td>99 Es (252)</td> <td>100 Fm (257)</td> <td>101 Md (258)</td> <td>102 No (259)</td> <td>103 Lr (260)</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>																		*	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)				
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Useful Information

$$M_1 V_1 = M_2 V_2$$

Quiz 7A

Chemistry 1141

Fall 2012

Name: _____

10/15/2012

Q1. [3 pts.] 34.0 mL of helium gas at a pressure of 311 mmHg is compressed until its volume becomes 21.4 mL. What will its pressure become? Assume the temperature does not change.

Q2. [3 pts.] 34.0 mL of helium gas at a temperature of 15 °C is cooled down to –15 °C. What is its new volume? Assume the pressure does not change.

Q3. [4 pts.] What pressure will 4.00 g of helium gas exert if its temperature is 145 °C when it is confined to a volume of 902 mL?

Periodic Table

1 IA																		18 VIIA
1 H 1.01	2 IIA																	2 He 4.00
3 Li 6.94	4 Be 9.01																	
11 Na 22.99	12 Mg 24.31	3 IIIIB	4 IVB	5 VB	6 VIB	7 VIIIB	8 VIIIB	9 VIIIB	10 IB	11 IB	12 IIB							
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)

Useful Information

$$pV = nRT \quad R = 0.08206 \frac{\text{atm} \cdot \text{L}}{\text{mol} \cdot \text{K}} \quad 1 \text{ atm} = 760 \text{ mmHg} = 101325 \text{ Pa}$$

Quiz 8A

Chemistry 1141

Fall 2012

Name: _____

10/22/2012

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Q1. [3 pts.] 10.0 g of copper at a temperature of 143.0 °C is dropped into an insulated container of water at an initial temperature of 24.4 °C. If the final temperature of the system is 38.2 °C then calculate the amount of heat lost by the copper.

Q2. [3 pts.] How much heat was gained by the water?

Q3. [4 pts.] What mass of water must have been in the container?

Periodic Table

1 IA																		18 VIIA
1 H 1.01	2 IIA																	2 He 4.00
3 Li 6.94	4 Be 9.01																	
11 Na 22.99	12 Mg 24.31	3 IIIIB	4 IVB	5 VB	6 VIIB	7 VIIIB	8 VIIIB	9 VIIIB	10 VIIIB	11 IIB	12 IIB	13 IIIA	14 IVA	15 VA	16 VIA	17 VIIA		
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)					

Useful Information

$$q = m \cdot s \cdot \Delta t \quad q = C \cdot \Delta t$$

Substance	Specific Heat (J/g · °C)
Al	0.900
Au	0.129
C (graphite)	0.720
C (diamond)	0.502
Cu	0.385
Fe	0.444
Hg	0.139
H ₂ O	4.184
C ₂ H ₅ OH (ethanol)	2.46

Quiz 9A

Chemistry 1141

Fall 2012

Name: _____

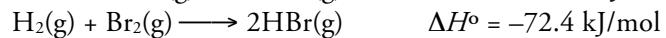
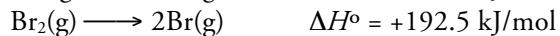
10/29/2012

Show ALL work to receive credit!

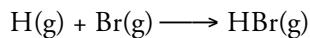
Q1. [3 pts.] Write the thermochemical equation corresponding to $\Delta H_f^\circ(C_3H_7OH(l))$



Q2. [4 pts.] Given the following thermochemical equations:



Determine ΔH° for the reaction



Q3. [3 pts.] Calculate the energy of a photon of green light, with a wavelength of 532 nm.

Periodic Table

1 IA																		18 VIIA
1 H 1.01	2 IIA																	2 He 4.00
3 Li 6.94	4 Be 9.01																	
11 Na 22.99	12 Mg 24.31	3 IIIIB	4 IVB	5 VB	6 VIB	7 VIIIB	8 VIIIB	9 VIIIB	10 IB	11 IB	12 IIB							
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)								
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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)					

Useful Information

$$c = \nu\lambda$$

$$E = h\nu$$

$$c = 3.00 \times 10^8 \text{ m/s}$$

$$h = 6.626 \times 10^{-34} \text{ J}\cdot\text{s}$$

Quiz 10A

Chemistry 1141

Fall 2012

Name: _____

11/5/2012

Show ALL work to receive credit!

Q1. [6 pts.] Calculate the *wavelength* of light (in nm) emitted from a hydrogen atom undergoing a transition from $n = 6$ to $n = 2$.

Q2. [4 pts.] Write out the *full* electron configuration and the *orbital diagram* for an atom of silicon.

Periodic Table

1 IA																		18 VIIA																																					
1 H 1.01	2 IIA																	2 He 4.00																																					
3 Li 6.94	4 Be 9.01																																																						
11 Na 22.99	12 Mg 24.31	3 IIIIB	4 IVB	5 VB	6 VIB	7 VIIIB	8 VIIIB	9 VIIIB	10 IB	11 IB	12 IIB	13 IIIA	14 IVA	15 VA	16 VIA	17 VIIA																																							
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)																																													
<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>*</td> <td>58 Ce 140.1</td> <td>59 Pr 140.9</td> <td>60 Nd 144.2</td> <td>61 Pm (145)</td> <td>62 Sm 150.4</td> <td>63 Eu 152.0</td> <td>64 Gd 157.3</td> <td>65 Tb 158.9</td> <td>66 Dy 162.5</td> <td>67 Ho 164.9</td> <td>68 Er 167.3</td> <td>69 Tm 168.9</td> <td>70 Yb 173.0</td> <td>71 Lu 175.0</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>^</td> <td>90 Th 232.0</td> <td>91 Pa (231)</td> <td>92 U 238.0</td> <td>93 Np (237)</td> <td>94 Pu (244)</td> <td>95 Am (243)</td> <td>96 Cm (247)</td> <td>97 Bk (247)</td> <td>98 Cf (251)</td> <td>99 Es (252)</td> <td>100 Fm (257)</td> <td>101 Md (258)</td> <td>102 No (259)</td> <td>103 Lr (260)</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>																		*	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)				
*	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																																									
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Useful Information

$$c = \nu\lambda$$

$$E = h\nu$$

$$c = 3.00 \times 10^8 \text{ m/s}$$

$$h = 6.626 \times 10^{-34} \text{ J}\cdot\text{s}$$

$$E_n = -R_H \left(\frac{1}{n^2} \right)$$

$$R_H = 2.18 \times 10^{-18} \text{ J}$$

Quiz 11A

Chemistry 1141

Fall 2012

Name: _____

12/3/2012

Show ALL work to receive credit!

Q1. [6 pts.] Predict the molecular geometry of SCl_4 . Your answer should include:

- (i) A valid Lewis structure, (ii) A sketch of the molecular geometry using line, dash, and wedge notation, (iii) Approximate bond angles written out, and (iv) the name of the molecular geometry.

Q2. [4 pts.] Using valence-bond theory, explain the bonding in NH_3 .

Periodic Table

1	I_A	H	2	II_A
	1	1.01	4	
	3		Be	
	Li	6.94	9.01	
		11	12	
		22.99	Mg	
			24.31	
		19	20	
		K	Ca	
		39.1	40.08	
		37	38	
		Rb	Sr	
		85.47	87.62	
		55	56	
		Cs	Ba	
		132.9	137.3	
		87	88	
		Fr	Ra	
		(223)	(226)	

VIIIA		VIA		VIA		VIA		VIA		VIA	
2		He		Ne		Ar		Kr		Rn	
18		10		18		18		36		36	
13 III A	14 IV A	6 C	7 N	8 O	9 F	10 Ne	11 Ar	12 Kr	13 Rn	14 (222)	15 (222)
5 B 10.81	6 C 12.01	7 N 14.01	8 O 16.00	9 F 19.00	10 Ne 20.18						
13 Al 26.98	14 Si 28.09	15 P 30.97	16 S 32.07	17 Cl 35.45	18 Ar 39.95						
31 Ga 69.72	32 Ge 72.61	33 As 74.92	34 Se 78.96	35 Br 79.90	36 Kr 83.80						
49 In 114.82	50 Sn 118.71	51 Sb 121.76	52 Te 127.6	53 I 126.9	54 Xe 131.29						
81 Tl 204.4	82 Pb 207.2	83 Bi 209	84 Po (209)	85 At (210)	86 Rn (222)						