

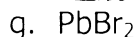
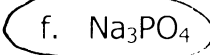
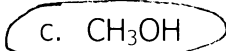
Quiz #5

Chemistry, 7th ed., Zumdahl & Zumdahl, sections 4.1-4.3, 4.5, 4.6, 4.8

Unless otherwise specified, each question is worth 4 points.

Note that there is a Periodic Table of the Elements and some other possibly helpful information on the last page of this quiz.

1. Which of the following compounds are likely to be soluble in water? (Circle the compounds that are water soluble; 1 point each)



MIN: 0 (-4)
 MAX: 4 (-0)

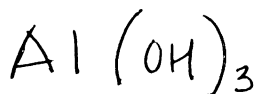
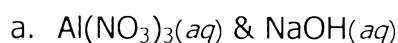
2. How many moles of sodium hydroxide are contained in 25.6 mL of a solution that is 0.104 M NaOH(aq)?

$M = \frac{\text{mol}}{L}$
 2 PTS

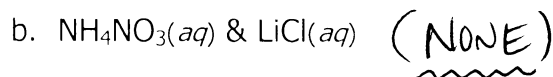
$0.104 = \frac{\text{mol}}{0.0256}$

$\text{mol} = \boxed{0.00266} \text{ (mol)}$

3. What solid product, if any, is likely to form when the following reactant solutions are mixed? (2 points each)

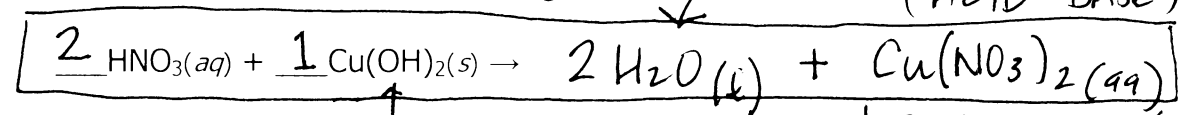


~~Al(OH)₃~~
 FORMULA ERROR = -1
 (e.g. AlOH)

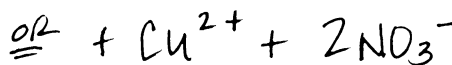


Unless otherwise specified, each "blank" is worth 1 point.

4. Complete and balance the following chemical reaction:



(STRONG ACID) (BASE)

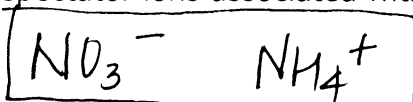


(aq) NOT NECESSARY, BUT O.K.

5. When aqueous solutions of nickel(II) nitrate and ammonium phosphate are mixed, a precipitate forms.



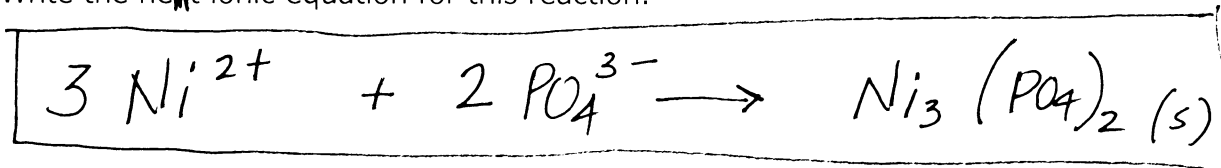
a. What are the spectator ions associated with this process?



FORMULA ERROR = -1

(1 POINT EACH)

b. Write the net ionic equation for this reaction.



NOT BALANCED: -1 POINT
OR INCORRECT PRODUCT FORMULA

Unless otherwise specified, each "blank" is worth 1 point.

Abbreviated Periodic Table of the Elements

1 1A																		18 8A
1 H 1.01	2 2A												13 3A	14 4A	15 5A	16 6A	17 7A	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 3B	4 4B	5 5B	6 6B	7 7B	8 8B	9 8B	10 8B	11 1B	12 2B	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 39.10	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 65.38	31 Ga 69.72	32 Ge 72.59	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 101.1	45 Rh 102.9	46 Pd 106.4	47 Ag 107.9	48 Cd 112.4	49 In 114.8	50 Sn 118.7	51 Sb 121.8	52 Te 127.6	53 I 126.9	54 Xe 131.3	
55 Cs 132.9	56 Ba 137.3	71 Lu 175.0	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 209.0	84 Po (209)	85 At (210)	86 Rn (222)	
87 Fr (223)	88 Ra 226	103 Lr (262)	104 Rf	105 Db	106 Sg	107 Bh	108 Hs	109 Mt	110 Uun	111 Uuu	112 Uub	113	114	115				

57 La 138.9	58 Ce 140.1	59 Pr 140.9	60 Nd 144.2	61	62	63	64	65	66	67	68	69	70
89 Ac (227)	90 Th 232.0	91 Pa 231.0	92 U 238.0	93 Np (237)	94 Pu (244)	95 Am (243)	96 Cm (247)	97	98	99	100	101	102

POSSIBLY HELPFUL INFORMATION:

Water Solubility Rules (ref. Table 4.1, p. 144, *Chemistry, seventh edition*, Zumdahl & Zumdahl)

Note that there may be a number of exceptions to these rules, and/or there are more subtle classifications ("partially soluble", "somewhat soluble", "marginally soluble", etc.), but these are the rules that we will use in CHM 101 & 114.

- (Required memorization)
- (Required memorization)
 - (Required memorization)
 - (Required memorization)
- Most chloride, bromide, and iodide salts are soluble. EXCEPTIONS (for CHM 114 & 101): chloride, bromide, and iodide salts containing Ag^+ , Pb^{2+} , and Hg_2^{2+} are INSOLUBLE.
- Most sulfate salts are soluble. EXCEPTIONS (for CHM 114 & 101): BaSO_4 , PbSO_4 , Hg_2SO_4 , and CaSO_4 , are INSOLUBLE.
- Most hydroxide salts are insoluble, unless rule #2 applies to the compound.
- Most sulfide (S^{2-}), carbonate (CO_3^{2-}), chromate (CrO_4^{2-}), and phosphate (PO_4^{3-}) salts are insoluble, unless rule #2 applies to the compound.

Quiz #1

Chemistry, 7th ed., Zumdahl & Zumdahl, sections 1.7-1.9, 2.5-2.7

Wallace

revised 04/21/2009

Unless otherwise specified, each question is worth 4 points.

Generic Grading Rubric for Chemistry @ LTCC: (rev. 11/21/08)

In general, incorrect answers will be assigned pro-rated partial credit proportional to the amount of the supporting work that is correct. Pro-rated points will typically be rounded to whole numbers. Other deductions will be assigned per question as described below:

- a) any combination of wrong significant figures and/or missing or incorrect units and/or "dumb" math error(s)..... -1 point
- b) no answer provided / blank -100%
- c) incorrect answer; no work shown..... -100%
- d) correct answer, but no supporting work is shown when complex, multi-step calculations are required (*This looks suspiciously like cheating.*) -100%
- e) completely incorrect concept or approach, but some correct calculations associated with this type of problem are shown..... - ~60-80%
- f) description and/or outline of correct approach or concept, but calculations performed or answers calculated are missing or incomplete - ~30-40%