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Section: (circle one) M,W,F Tu,Tr

For problems involving calculations you must show your work for credit. Unless otherwise stated, you may assume $T = 25.0\text{ }^{\circ}\text{C}$.

1) A chemist has the following two solutions

Solution A	0.0428 M HCl (a strong acid)
Solution B	0.1425 M KOH (a strong soluble base)

a) What are the values for pH for solution A and solution B?

b) A new solution, solution C, is formed by combining 10.00 mL of solution A with 15.00 mL of solution B. What is the pH for solution C?

2) Give the correct expressions for K_{sp} for the following slightly soluble ionic compounds in water.

a) CaF_2 (calcium fluoride) $K_{sp} =$

b) Ag_2SO_4 (silver sulfate) $K_{sp} =$

3) The solubility product for lead II bromide (PbBr_2 , MW = 367.0 g/mol) is $K_{\text{sp}} = 4.6 \times 10^{-6}$ at $T = 25.0 \text{ }^\circ\text{C}$.

a) Give the reaction corresponding to PbBr_2 dissolving in water, and the corresponding expression for K_{sp} .

b) What are the molar solubility and solubility by mass for lead II bromide in pure water?

c) What are the molar solubility and the solubility by mass for lead II bromide when added to a 0.088 M solution of sodium bromide (NaBr , MW = 102.9 g/mol), a soluble ionic compound?

4) What is the molar solubility for cadmium hydroxide ($\text{Cd}(\text{OH})_2$, MW = 146.4 g/mol) in a pH = 10.00 buffer solution? The solubility product for cadmium hydroxide is $K_{\text{sp}} = 2.0 \times 10^{-14}$