only the final values to problems are given here as partial answers.

Page 2

2) $\text{HCOO}^-; K_b = 5.9 \times 10^{-11}; pK_b = 10.23$

3) $\text{C}_2\text{H}_5\text{NH}_3^+; K_a = 1.8 \times 10^{-11}; pK_a = 10.75$

4) $\text{CO}_3^{2-}; 3.75; K_b$ value for $\text{HCO}_3^-$ is not determinable from this information

Page 3

9) $[\text{OH}^-] = 4.1 \times 10^{-9} \text{M}$

Page 5

1a) $0.39 \text{ M Na}_2\text{SO}_4$

b) $0.79 \text{ M Na}^+$

c) $0.39 \text{ M in } \text{SO}_4^{2-}$

2) $11 \text{ g K}_3\text{PO}_4$

3) $15 \text{ M NH}_3$

Page 6

4a) $0.09932 \text{ M NaOH}$

b) $56.79\% \text{ KHP}$