Which of the following is true?

1. The pH at the equivalence point is > 7 when a weak acid is titrated with a strong base.
2. The pH at the equivalence point depends on the properties of the salt formed.
3. Na^+ has no effect on pH.
4. HCO_2^- is a base
5. All of the above are true.

Which of the following is true?

12%

9%

6%

3%

70%

1. The pH at the equivalence point is > 7 when a weak acid is titrated with a strong base.
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4. HCO_2^- is a base
5. All of the above are true.

Which of the following K_a expressions is correct following the addition of 0.100 mol of HCl?

1. $K_a = [H_3O^+][HCOO^-]/[HCOOH]$
   $K_a = (0.400 + x)(x) / (1.10 - x)$
2. $K_a = [H_3O^+][HCOO^-]/[HCOOH][H_2O]$
   $K_a = (0.400 + x)(x) / (1.10 - x)$
3. $K_a = [H_3O^+][HCOO^-]/[HCOOH]$
   $K_a = x^2 / (1.10 - x)$
4. $K_a = [H_3O^+][HCOO^-]/[HCOOH]$
   $K_a = (0.500 + x)(x) / (1.00 - x)$

Which of the following K_a expressions is correct following the addition of 0.100 mol of HCl?

79%

1. $K_a = [H_3O^+][HCOO^-]/[HCOOH]$
   $K_a = (0.400 + x)(x) / (1.10 - x)$

11%

2. $K_a = [H_3O^+][HCOO^-]/[HCOOH][H_2O]$
   $K_a = (0.400 + x)(x) / (1.10 - x)$

3%

3. $K_a = [H_3O^+][HCOO^-]/[HCOOH]$
   $K_a = x^2 / (1.10 - x)$

7%

4. $K_a = [H_3O^+][HCOO^-]/[HCOOH]$
   $K_a = (0.500 + x)(x) / (1.00 - x)$

Calculate the molarity of H_3O^+.

1. 3.40×10^{-4} mol / (0.02500 L) = 1.54×10^{-2} M
2. 3.40×10^{-4} mol / (0.02500 L + 0.00100 L) = 1.31×10^{-2} M
3. 3.40×10^{-4} mol / (0.02500 L + 0.0184 L) = 7.83×10^{-3} M
4. 3.40×10^{-4} mol / (0.02500 L + 0.0184 L + 0.00100 L) = 7.66×10^{-3} M

Calculate the molarity of H_3O^+.

8%

1. 3.40×10^{-4} mol / (0.02500 L) = 1.54×10^{-2} M

33%

2. 3.40×10^{-4} mol / (0.02500 L + 0.00100 L) = 1.31×10^{-2} M

7%

3. 3.40×10^{-4} mol / (0.02500 L + 0.0184 L) = 7.83×10^{-3} M

52%

4. 3.40×10^{-4} mol / (0.02500 L + 0.0184 L + 0.00100 L) = 7.66×10^{-3} M

$$pH = -\log[0.00421] = 2.38$$

(to how many sig figs?)

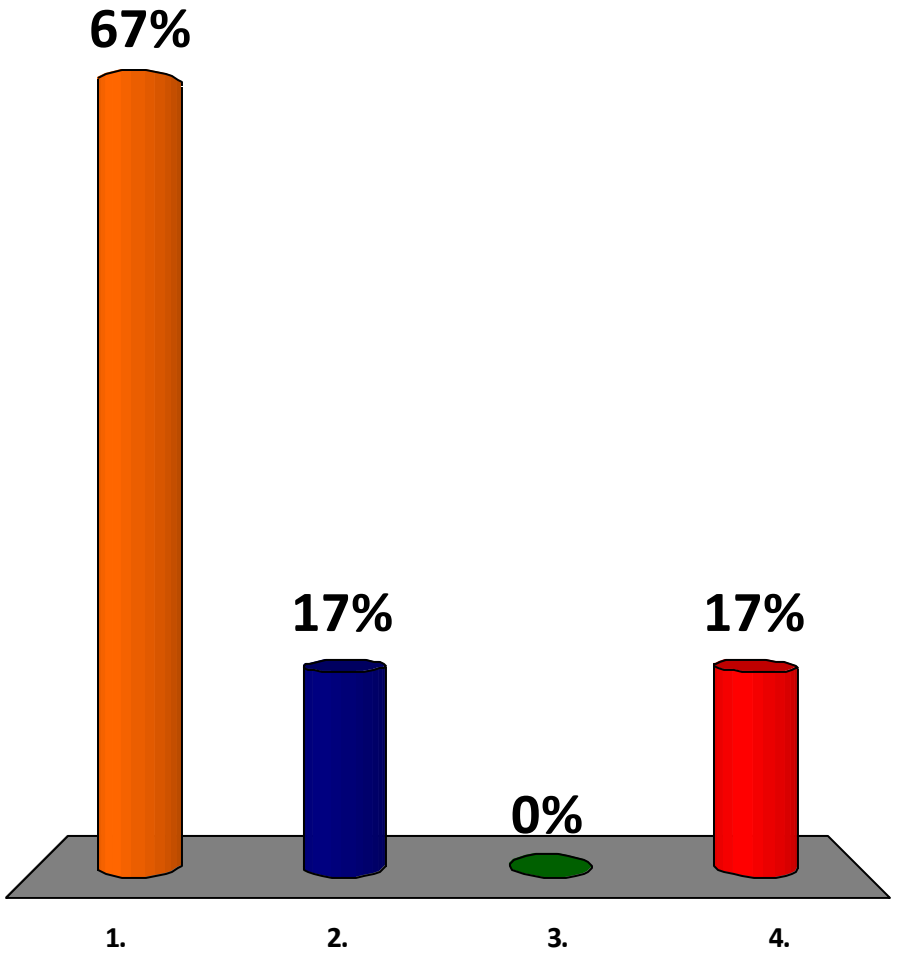
hint: first ask yourself, how many sig figs are in $[H_3O^+]$

1. 2.4
2. 2.38
3. 2
4. 2.375

pH = -log[0.00421] = 2.38
(to how many sig figs?)

hint: first ask yourself, how many sig figs are in $[H_3O^+]$

1. 2.4
2. 2.38
3. 2
4. 2.375



0.75×10^{-3} moles of OH^- reacting with 2.5×10^{-3} moles of HCOOH produces how many moles of HCO_2^- ?

1. $2.5 \times 10^{-3} - 0.75 \times 10^{-3} = 1.75 \times 10^{-3}$
2. 0.75×10^{-3}
3. 2.5×10^{-3}
4. Depends on the K_b of HCO_2^-
5. Depends on the K_a of HCO_2^-

0.75×10^{-3} moles of OH^- reacting with 2.5×10^{-3} moles of HCOOH produces how many moles of HCO_2^- ?

0% 1. $2.5 \times 10^{-3} - 0.75 \times 10^{-3} = 1.75 \times 10^{-3}$

0%  2. 0.75×10^{-3}

0% 3. 2.5×10^{-3}

0% 4. Depends on the K_b of HCO_2^-

0% 5. Depends on the K_a of HCO_2^-

5.111 Principles of Chemical Science
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