Dougherty Valley HS Chemistry - AP
Acid Base – An FRQ

Worksheet #3

Name: **Period:** **Seat#:**

Directions: Show all work for each problem and/or give an AP level explanation. Box your final answers.

The overall dissociation of oxalic acid, $H_2C_2O_4$, is represented below. The overall dissociation constant is also indicated.

$$\mathbf{H_2C_2O_4 \Leftrightarrow 2\ H^+ + C_2O_4^{2-} \qquad K = 3.78 \times 10^{-6}}$$

1) What volume of 0.400-molar NaOH is required to neutralize completely a 5.00×10^{-3} mole sample of pure oxalic acid? *25.0 mL*

2) Give the equations representing the first and second dissociations of oxalic acid.

3) Calculate the value of the first dissociation constant, K_1, for oxalic acid if the value of the second dissociation constant, K_2, is 6.40×10^{-5}. *5.91×10^{-2}*

4) To a 0.015-molar solution of oxalic acid, a strong acid is added until the pH is 0.5. Calculate the $[C_2O_4^{2-}]$ in the resulting solution. (Assume the change in volume is negligible.) *5.67×10^{-7} M*

5) Calculate the value of the equilibrium constant, K_b, for the reaction that occurs when solid $Na_2C_2O_4$ is dissolved in water. *1.56×10^{-10}*