Friday Worksheet **Name: …….**

Acid base equilibria worksheet 2

1) Consider the two solutions below at 25^{o}C
   i. 100.0 mL of 0.100 M HCOOH
   ii. 100.0 mL of 0.100 M HCl

   a) What is the pH of each solution?

   b) The pH of which solution will undergo the greatest change when 900 mL of water is added to the solution. Explain

2) The ionisation of ethanoic acid can be represented by the equation
   $CH_3COOH(aq) + H_2O(l) \rightleftharpoons CH_3COO^-(aq) + H_3O^+(aq)$
   Which of the following solutions has the highest percentage ionisation. Verify mathematically and show all working out.
   A. 50 mL 1.0 M CH_3COOH solution..
   B. 100 mL 0.01 M CH_3COOH solution.

3) A 20.00 mL aliquot of a 0.200 M CH_3COOH (ethanoic acid) is titrated with 0.150 M NaOH. The equation for the reaction between the ethanoic acid and NaOH solution is represented below.

$$OH^-(aq) + CH_3COOH(aq) \rightarrow H_2O(l) + CH_3COO^-(aq)$$

What volume of the NaOH solution is required to completely react with the ethanoic acid?

4) A weak acid has a K_a of $10^{-4.994}$ at 25^{o}C and the solution pH is 4.523. What percentage of the acid is ionised?