Friday Worksheet **Name: …….**

Acid Base equilibria worksheet 1

1) What is the pH of a 100.0 mL 0.325 M H_3BO_3 solution at 25 ^oC?

2) Ethanoic acid is a weak monoprotic acid.
a) Write the equation that represents the ionisation reaction of ethanoic acid.

b) Write the equilibrium expression for this reaction.

c) Write the expression for the Ka of ethanoic acid

d) Which has the highest pH and offer an explanation.

i) 10.0 mL 0.100 M HCOOH solution or 100.0 mL 0.100 M CH_3COOH solution

ii) 10.0 mL of 0.01 M HCOOH solution or 10.0 mL 0.100 M HCOOH solution

e) Explain why diluting a solution of 0.100M HCOOH to 0.001M HCOOH, at constant temperature, increases the percentage ionisation of HCOOH.

3) A 20.00 mL aliquot of 0.200 M CH_3CH_2COOH (propanoic acid) is titrated with 0.250 M NaOH. The equation for the reaction between propanoic acid and NaOH solution is represented below.
$CH_3CH_2COOH(aq) + H_2O(l) \rightleftharpoons H_3O^+(aq) + CH_3CH_2COO^-(aq)$

a) Write the expression for the acidity constant.

b) What volume of NaOH is required to completely react with the acid.

c) Calculate the pH of the 0.200 M propanoic acid solution before any NaOH solution has been added.