**Q1:** Calculate:

1. [H+ ] , b)[OH- ] , c) pH , d) pOH of the final solution obtained after 100ml of 0.2M NaOH are added to 150ml of 0.4M H2SO4  .

**Q2:** How many grams of solid KOH are required to neutralize 2L of an HCl solution of pH 2 ?

**Q3:** The pH of a 0.27M solution of a weak acid , HA , is 4.3 . a) What is the [H+ ] in the solution ? b) what is the degree of ionization of the acid ? c) what is the Ka ?

**Q4:** Calculate the pka, kb and pkb of the following weak acids:

1. CH3COOH ka=1.8 x 10-5
2. Ammonium ion ka=5.7 x 10-10

**Q5:** The Ka of a weak acid HA, is 3 x 10-4. Calculate

a) The hydroxyl ion concentration in the solution

b) The degree of dissociation of the acid in a 0.15M solution.

**Q6:** How many ml of 0.1M KOH are required to titrate completely 270ml of 0.4M

 propionic acid?

**Q7:** 200ml of 0.2M NaOH was mixed with 800ml of 0.1M HCOOH. Calculate the pH of the resulting solution. pKa = 3.75.

**Q8:** In the following reaction:

A+ B 2C + D

If [A] = 2.1 x10-3  M, [B] = 3.4 x10-2 M , [D] = 1.8 x10-3 M , Keq= 6.23 x10-6

**Calculate the concentration of [C].**