

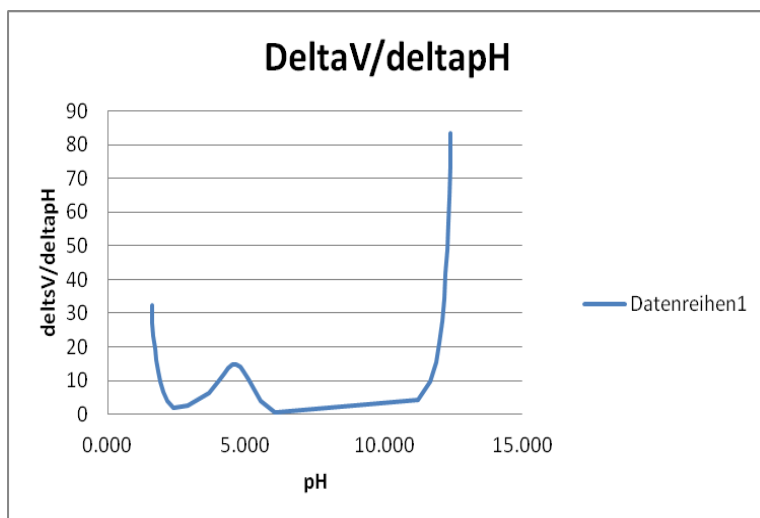
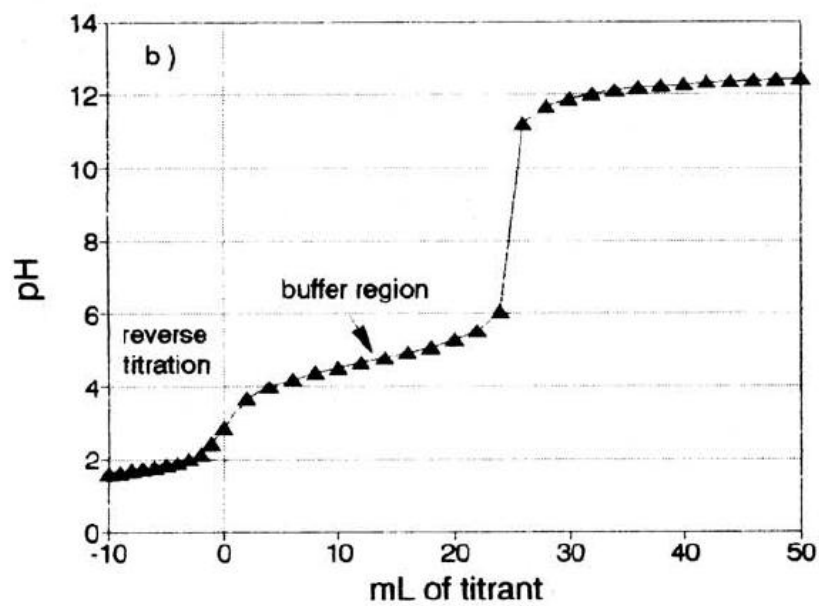
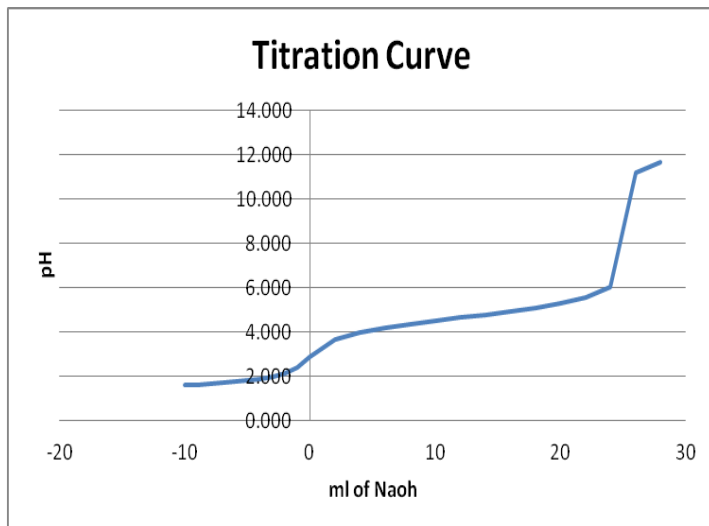
25 ml 0.100 M Acetic Acid

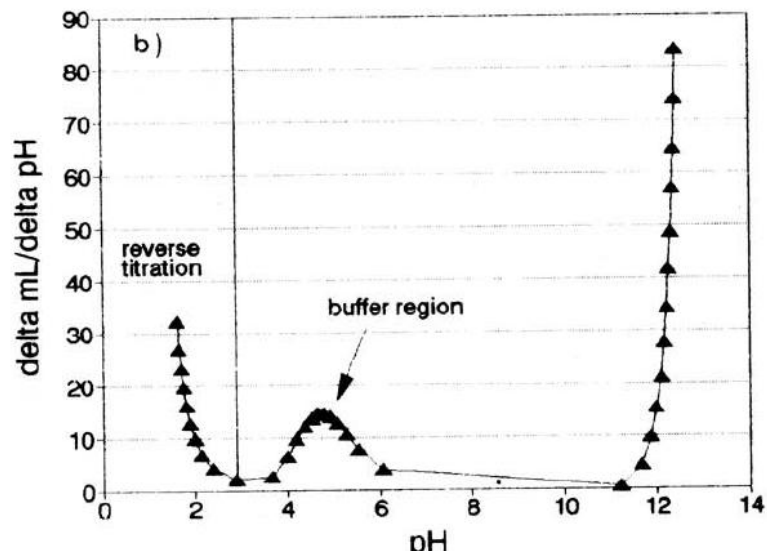
ml titrant	pH, HOAc sol	Delta pH	delts V	DeltaVml/deltapH	Slope Method	$\beta$
-10	1.596	0.031	1	32.25806452	0.031	0.00215054
-9	1.627	0.037	1	27.02702703	0.037	0.15202703
-8	1.664	0.043	1	23.25581395	0.043	0.10943912
-7	1.707	0.051	1	19.60784314	0.051	0.07625272
-6	1.758	0.062	1	16.12903226	0.062	0.05093379
-5	1.820	0.078	1	12.82051282	0.078	0.03205128
-4	1.898	0.103	1	9.708737864	0.103	0.01849283
-3	2.001	0.149	1	6.711409396	0.149	0.00915192
-2	2.150	0.244	1	4.098360656	0.244	0.00356379
-1	2.394	0.487	1	2.05338809	0.487	0.00085558
0	2.881	0.79	2	2.53164557	0.395	0
2	3.671	0.319	2	6.269592476	0.1595	0.00464414
4	3.990	0.209	2	9.56937799	0.1045	0.01319914
6	4.199	0.167	2	11.9760479	0.0835	0.02317945
8	4.366	0.147	2	13.60544218	0.0735	0.03298289
10	4.513	0.137	2	14.59854015	0.0685	0.04171011
12	4.650	0.137	2	14.59854015	0.0685	0.04734662
14	4.787	0.142	2	14.08450704	0.071	0.05055977
16	4.929	0.158	2	12.65822785	0.079	0.04939796
18	5.087	0.19	2	10.52631579	0.095	0.04406365
20	5.277	0.262	2	7.633587786	0.131	0.03392706
22	5.539	0.513	2	3.898635478	0.2565	0.01824893
24	6.052	5.16	2	0.387596899	2.58	0.00189843
26	11.212	0.459	2	4.357298475	0.2295	0.02221368
28	11.671	0.205	2	9.756097561	0.1025	0.05154165
30	11.876	0.130	2	15.38461538	0.065	0.08391608
32	12.006	0.094	2	21.27659574	0.047	0.11944756
34	12.100	0.072	2	27.77777778	0.036	0.16007533
36	12.172	0.058	2	34.48275862	0.029	0.2035048
38	12.230	0.048	2	41.66666667	0.024	0.25132275
40	12.278	0.041	2	48.7804878	0.0205	0.30018762
42	12.319	0.035	2	57.14285714	0.0175	0.35820896
44	12.354	0.031	2	64.51612903	0.0155	0.4114072
46	12.385	0.027	2	74.07407407	0.0135	0.47991654
48	12.412	0.024	2	83.33333333	0.012	0.54794521

Here the slope method is simply the inverse of deltaV/deltapH value.

And the  $\beta$ (buffer capacity from titration) column is calculated using the definition :

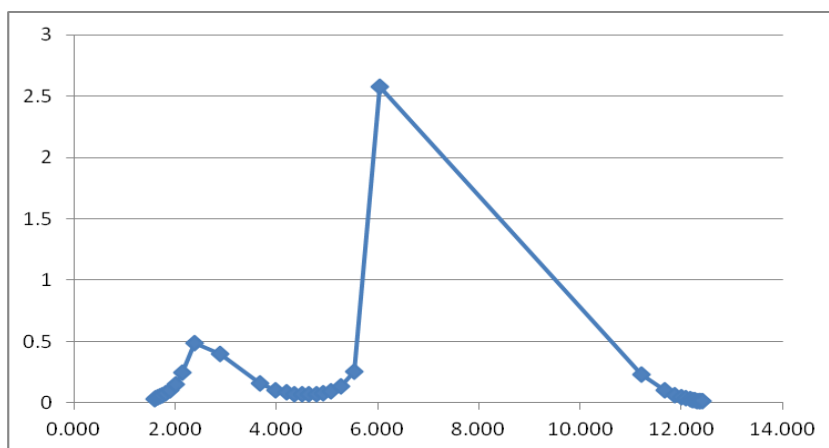
$\beta = (\text{DeltaVml/deltapH} * \text{conc. Naoh} * \text{ml NaOH}) / (1000 * \text{Total solution in litres})$



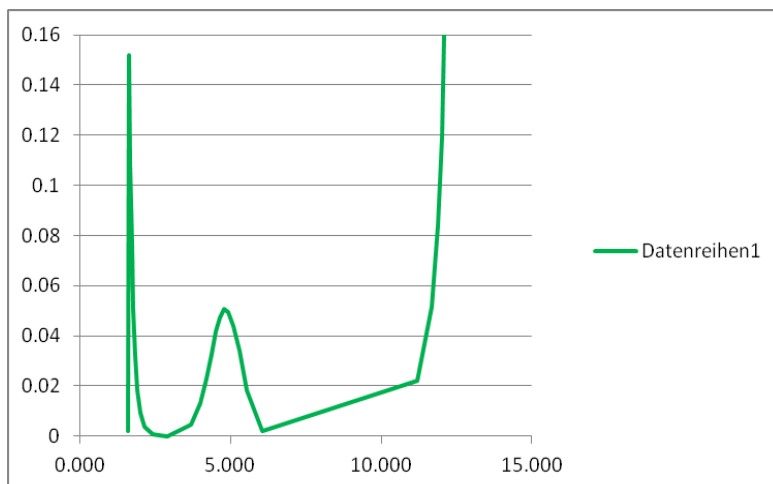


Corresponding buffer capacity cuves:

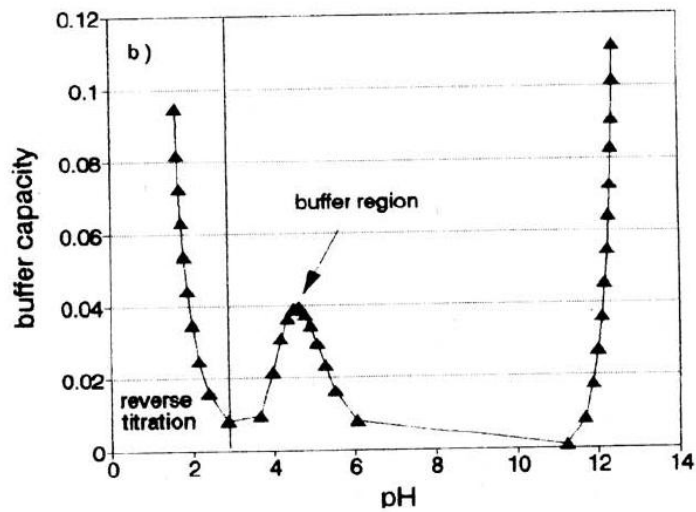
By slope method:



By  $\beta$  method:

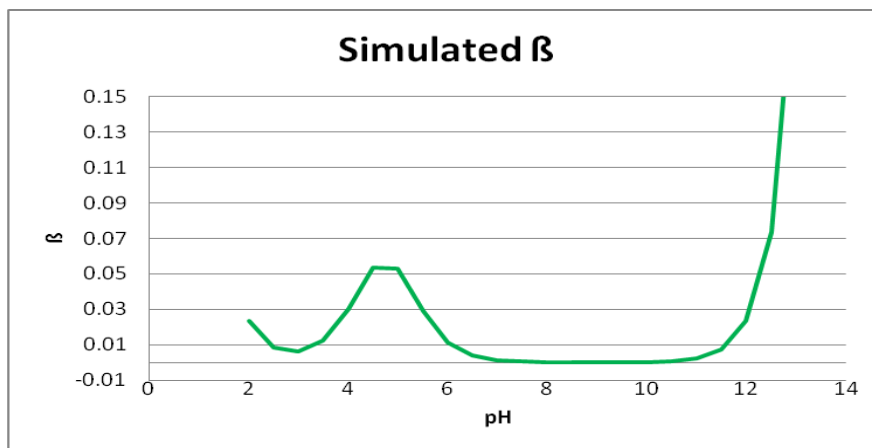


And from Litature:



And buffer capacity simulated using eq:

$$\beta = 2.303(\dots\dots\dots)$$



So the simulated buffer capacity shows a perfect match to the the digram from literature. But the above Diagram is obtained from titration curve and the same data table.