## Lecture Notes R: Acid-Base Chemistry V

## Concept

I make a buffer by mixing 10ml of 1M HAc with 10ml of 1M NaAc. About how much acid (1M HCl) would I need to add to break this buffer (with break meaning cause the pH to drop by more than 1 unit).

a) 5ml	b) 6ml	c) 7ml	d) 8ml
e) 9ml	f) 10ml	g) 11ml	h) 12ml

Which weak acid should I use to make a buffer solution with pH=3.1?

- a) A weak acid with  $pK_a = 2$
- b) A weak acid with  $pK_a = 3$
- c) A weak acid with  $pK_a = 4$
- d) A weak acid with  $pK_a = 5$

Suppose I want to make a buffer with a pH=3.5, and I would like it to be more resistant to addition of acid than to addition of base, which weak acid should I use?

- a) A weak acid with  $pK_a = 2$
- b) A weak acid with  $pK_a = 3$
- c) A weak acid with  $pK_a = 4$
- d) A weak acid with  $pK_a = 5$

Which of the following systems is obviously not at equilibrium (for weak acids with  $pK_a$  of between 3 and 11):



Consider two acids HB ( $pK_a = 4.5$ ) and HC ( $pK_a = 5.4$ ). I make a solution by mixing together equal amounts of 1M HB and 1M NaB. I then add a drop of HC. The ratio [C<sup>-</sup>]/[HC] is closest to: a) 1/100 b) 1/10 c) 1 d) 10 e) 100

If I want to increase the ratio [C<sup>-</sup>]/[HC], which should I add to the above solution: a) HB b) NaB