#Jenny

Finally I get this ebook, thanks for all these I can get now!

#Rio

Cool! I'am really happy

#Markus Jensen

I did not think that this would work, my best friend showed me this website, and it does! I get my most wanted eBook

#Hun Tsu

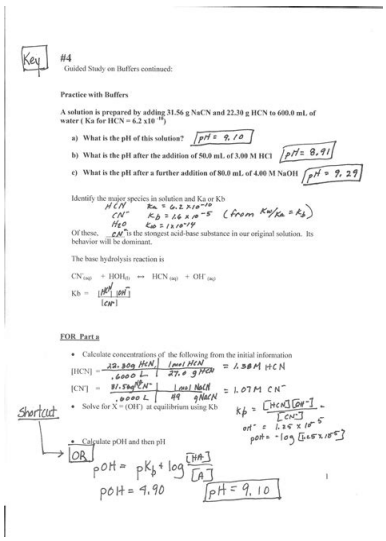
wtf this great ebook for free?!

#Che Salsa

My friends are so mad that they do not know how I have all the high quality ebook which they do not!

#Diego Butler

so many fake sites. this is the first one which worked! Many thanks


Key

#4

Guided Study on Buffers continued:

Practice with Buffers

A solution is prepared by adding 31.56 g NaCN and 22.30 g HCN to 600.0 mL of water (Ka for HCN = 6.2 x 10^{-10})

a) **What is the pH of this solution?** pH = 9.10

b) **What is the pH after the addition of 50.0 mL of 3.00 M HCl** pH = 8.91

c) **What is the pH after a further addition of 80.0 mL of 4.00 M NaOH** pH = 9.29

Identify the major species in solution and Ka or Kb

HCN Ka = 6.2 x 10^{-10}

CN$^-$ Kb = 1.6 x 10^{-5} (from Kw/Ka = Kb)

H$_2$O Kb = 1.0 x 10^{-14}

Of these, CN$^-$ is the strongest acid-base substance in our original solution. Its behavior will be dominant.

The base hydrolysis reaction is

$CN^-_{(aq)} + HOH_{(l)} \leftrightarrow HCN_{(aq)} + OH^-_{(aq)}$

$K_b = \frac{[HCN][OH^-]}{[CN^-]}$

FOR Part a

- Calculate concentrations of the following from the initial information

[HCN] = $\frac{22.30\ g\ HCN}{.6000\ L} \left| \frac{1\ mol\ HCN}{27.0\ g\ HCN} \right. = 1.38M\ HCN$

[CN$^-$] = $\frac{31.56\ g\ NaCN}{.6000\ L} \left| \frac{1\ mol\ NaCN}{49\ g\ NaCN} \right. = 1.07M\ CN^-$

- Solve for X = [OH$^-$] at equilibrium using Kb

$K_b = \frac{[HCN][OH^-]}{[CN^-]}$

$OH^- = 1.25 \times 10^{-5}$

$pOH = -\log[1.25 \times 10^{-5}]$

Shortcut

- Calculate pOH and then pH

OR

$pOH = pK_b + \log\frac{[HA]}{[A]}$

pOH = 4.90

pH = 9.10

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Key Acid Base Study Guide