

① $\text{HBrO} \rightarrow \text{H}^+ + \text{BrO}^-$

I	0.55	}	0	}	0
Δ	-x	}	+x	}	+x
E	0.55-x	}	x	}	x

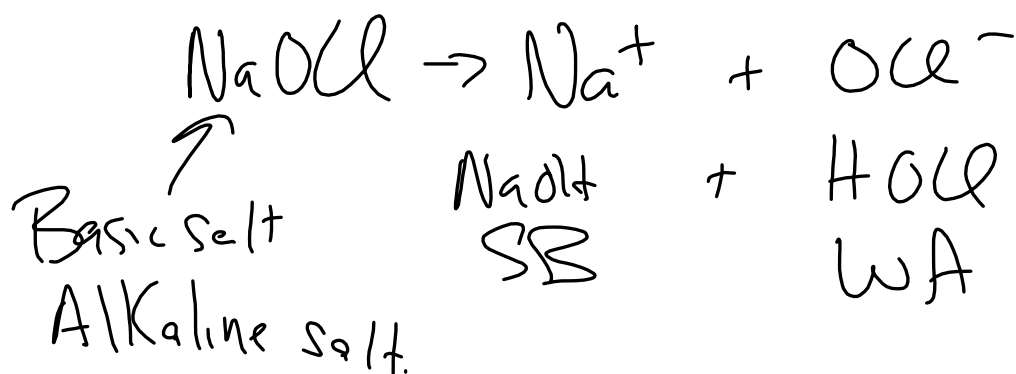
$K_a = \frac{x^2}{0.55-x}$
 ↓
 dissov. const acid.
 H^+ given off.

Least acidic
 fewest H^+

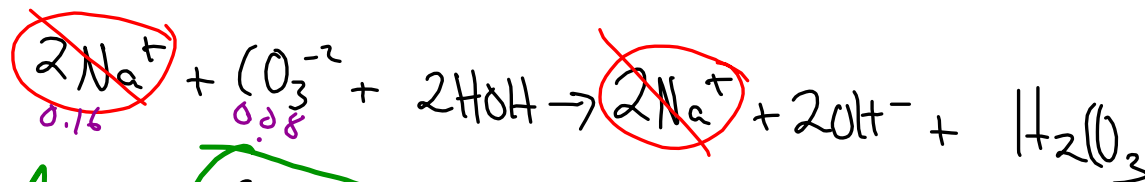
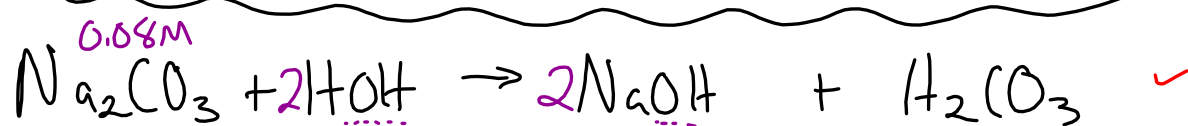
PH = 4.48

PH = $-\log[\text{H}^+]$

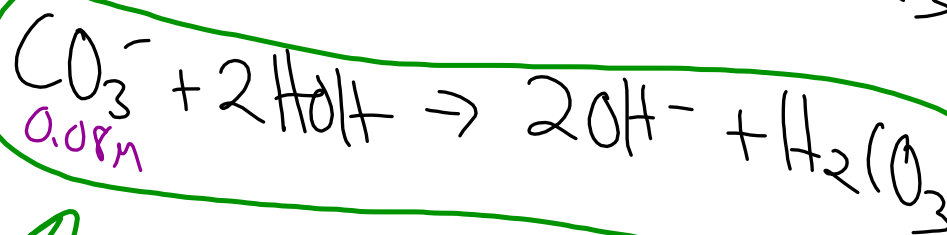
$[\text{H}^+] = 3.31 \times 10^{-5}$



[0.08M Na_2CO_3 (aq) Find pH and $[\text{OH}^-]$]



Net
ionic



H⁺ a (reacts)

CO_3^{2-}	$+ 2\text{H}_2\text{O}$	\rightleftharpoons	2OH^-	$+ \text{H}_2\text{CO}_3$
I	0.08		0	0
Δ	-x		+2x	+x
E	0.08-x		2x	x

mult. ratio

$K_b = \frac{(2x)^2 x}{0.08-x} = 415$

$\frac{4x^3}{0.08} = 415$

$x = 2.02$

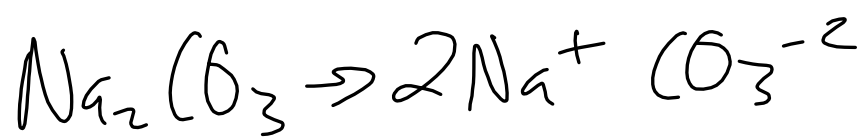
$[\text{OH}^-] = 2x = 4.04$
 $\text{pOH} = \log(\text{OH}^-)$
 $\text{pOH} = -0.6$
 $\text{pH} = 14.6$

MOLE RATIO

$\text{H}_2\text{CO}_3 \rightarrow \text{H}^+ + \text{HCO}_3^- \quad [K_a]$
 $\text{HCO}_3^- \rightarrow \text{H}^+ + \text{CO}_3^{2-} \quad [K_a]$

$K = K_a \cdot K_a$
 $K = 2.41 \times 10^{-17}$

$K_c \cdot K_b = K_w$



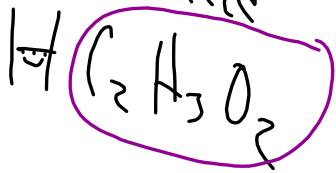
$$K = \frac{[\text{Na}]^2 [\text{CO}_3^{2-}]}{[\text{Na}_2\text{CO}_3]}$$

Chap 17 - More aqueous equilibria

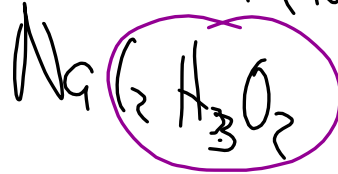
Common ion - ion that is repeated.
Present in more than 1 area

WA

HOAc
acetic acid



+ NaOAc
Sodium acetate



Salt Soluble

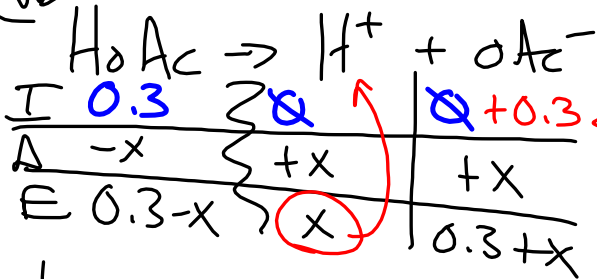
HOH

NaOAc →
Alkaline Salt
(Basic)

NaOH + HOAc
SB WA

Find pH of a solution of 0.3 mol/L H_2Ac + 0.3 mol/L NaOAc in 1 L soln.

(WA)



Sol salt
 $\text{NaOAc} \rightarrow \text{Na}^+ + \text{OAc}^-$
 0.3 M \rightarrow 0.3 M OAc^-
 Common Ion
 Breaks up \sim 100%

$$K_a = \frac{x(0.3+x)}{0.3-x} = 1.8 \times 10^{-5}$$

$$x = 1.8 \times 10^{-5} = [\text{H}^+]$$

$$\text{pH} = 4.74$$

0.2M HF + 0.1M HCl pH = ?

(common ion)

HF \rightarrow H⁺ + F⁻

I	0.2	0	0
D	-x	+x	+x
E	0.2-x	0.1+x	x

SA

HCl \rightarrow H⁺ + Cl⁻

0.1	0.1	0.1
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$K_a = \frac{(0.1+x)(x)}{0.2-x} = 6.8 \times 10^{-4}$

$x = 1.36 \times 10^{-3}$

0.68% ok < 5% approx

(H⁺) = 0.1 + x

(H⁺) = 0.10136M

pH = 0.994

17 / 16 atc , 18
↑
Watch
Volumes!