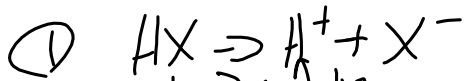


2016 E2



I	0.1	2x	x
D	-x	+x	+x
E	0.1-x	(x)	x

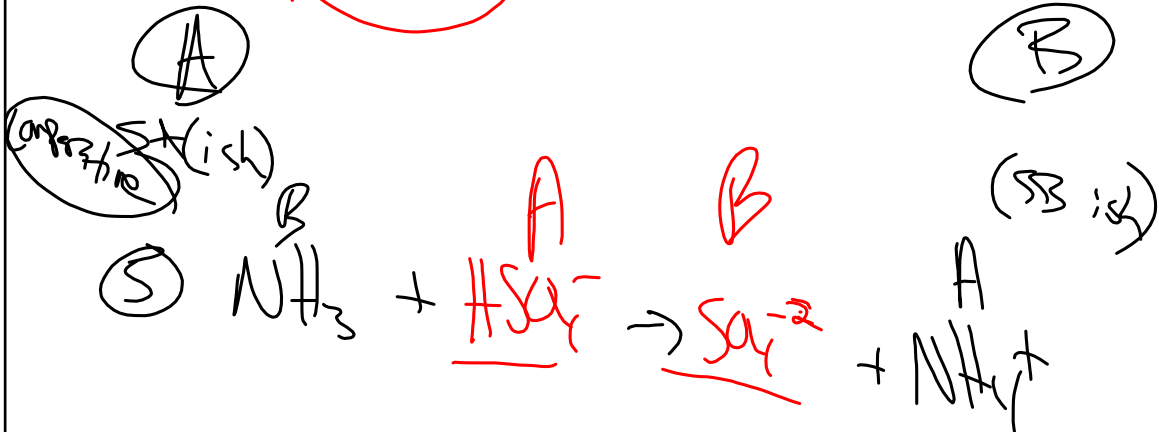
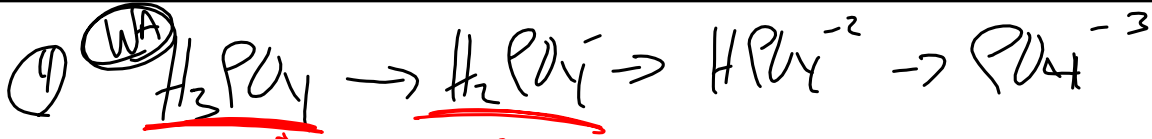
$pH = 4.0$   
 $[H^+] = 1 \times 10^{-4}$

$$\frac{x^2}{0.1-x} = \frac{(1 \times 10^{-4})^2}{0.1 - (1 \times 10^{-4})} = 1 \times 10^{-7}$$

⑭  $pH = 3.7$   
 $pH = -\log([H^+])$   
 $-3.7 = \log[H^+]$   
 $H^+ = 2 \times 10^{-4}$

$$\frac{(2 \times 10^{-4})^2}{0.1 - 2 \times 10^{-4}} = 4 \times 10^{-7}$$

Mar 18-7:37 AM



Mar 18-7:52 AM

⑦  $\text{pH} = 5.13$

$[\text{OH}^-] = \underline{1.35 \times 10^{-9}}$

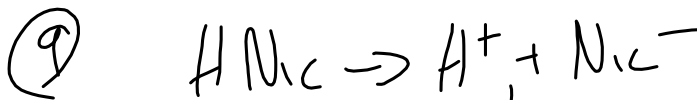
$\text{pOH} = 8.87$

$\text{pOH} = -\log(\text{OH}^-)$

$-8.87 = \log(\text{OH}^-)$

⑧  $\text{pH} = -\log(\text{H}^+)$   
 $(x \times 10^{-y})$   
 $= 7.4$

Mar 18-7:55 AM



I	0.1	0	0
A	-x	+x	+x
E	0.1-x	x	x

$K_a = \frac{x^2}{0.1 - x} = 1.4 \times 10^{-5}$

$x = 0.00118$   
 $0.0012$

$\frac{0.0012}{0.1}$

$0.012$

Mar 18-7:57 AM

⑩ pH 0.5 M  $\text{NO}_2^-$   $K_a = \text{HNO}_2 = 4.5 \times 10^{-4}$

WB ←

$\text{NO}_2^-$	$+$	$\text{H}_2\text{O}$	$\rightleftharpoons$	$\text{HNO}_2$	$+$	$\text{OH}^-$
I 0.5				x		x
Δ -x				+x		+x
E 0.5-x				x		x

$K_a \times K_b = K_w$   
 $K_b = 2.22 \times 10^{-7}$

$K_b = \frac{x^2}{0.5-x} = 2.22 \times 10^{-7}$

$x = 3.33 \times 10^{-6}$

$\text{pOH} = 5.48$   
 $\text{pH} = 8.52$

$\text{OH}^-$

Mar 18-8:00 AM

⑮  $\text{HA} \rightleftharpoons \text{H}^+ + \text{A}^-$

$K_A$   
 $N_A$

Mar 18-8:07 AM

① ~~K~~ OH + ~~HCl~~ → ~~KCl~~ + H<sub>2</sub>O

(10ml 0.273M)      (25ml 0.723M)

① Next using mols

I	0.00273	0.618075	} <del>ε</del> <del>α</del>
Δ	-0.00273	-0.00273	
E	α	0.015345	
		<u>0.0352</u>	

② Recalc new M  
35ml

0.4384M

Mar 18-8:08 AM

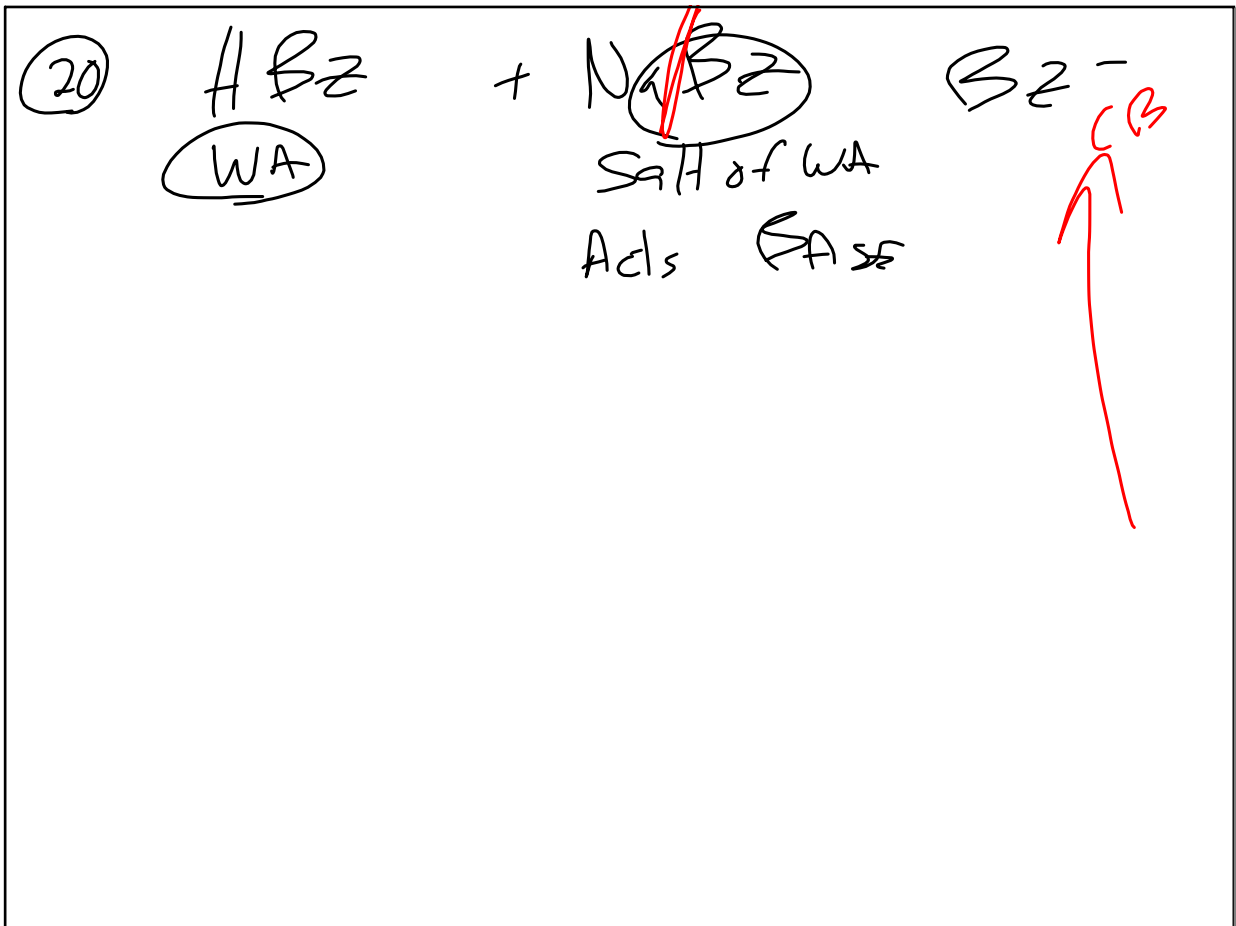
① HF + ~~OH~~ → ~~F~~ + H<sub>2</sub>O

I	0.0075	0.005	} <del>ε</del> <del>α</del>
Δ	-0.005	-0.005	
E	0.0025	α	
	<u>0.082</u>		<u>0.082</u>

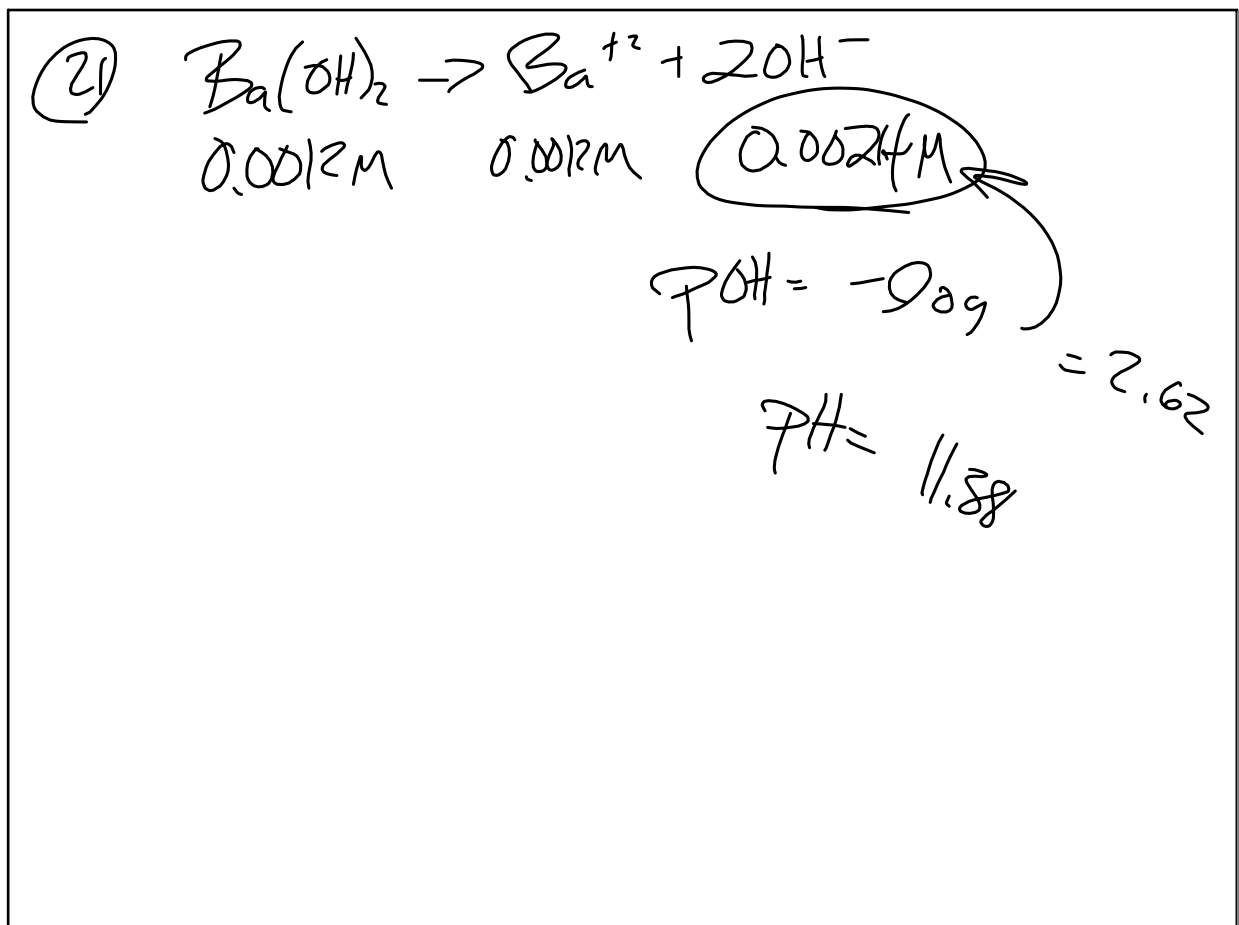
② Recal M → 0.03125M HF      0.0625M F<sup>-</sup>

$pH = pK_a + \log \frac{F^-}{HF}$

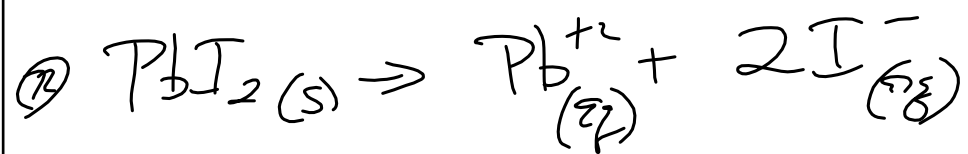
Mar 18-8:13 AM



Mar 18-8:16 AM

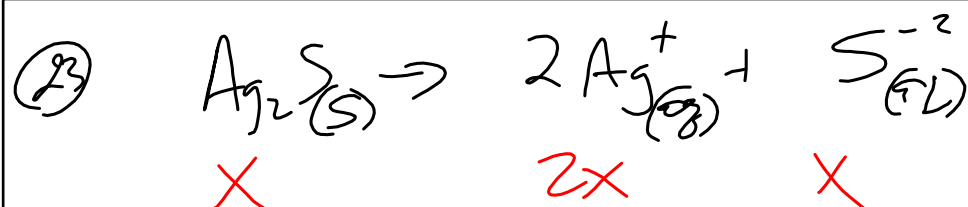


Mar 18-8:18 AM



$$K = [\text{Pb}^{+2}] [\text{I}^{-}]^2$$

Mar 18-8:19 AM



$$K_{sp} = [\text{Ag}^{+}]^2 [\text{S}^{-2}]$$

$$1 \times 10^{-51} = (2x)^2 (x)$$

$$\text{--- } 4x^3$$

$$x = 6.3 \times 10^{-18}$$

Mar 18-8:20 AM

$$\textcircled{fcl} \quad S_c \text{ SU}_1 \xrightarrow{(S)} S_c^{+2} + \text{SO}_1^{-2}$$

~~X~~
~~X~~
~~X~~ + 0.5

$$f_{sp} = (S_c^{-12}) (Y_1^{-2})$$

$$2.5 \times 10^{-7} = (X) (\textcircled{X} + 0.5)$$

$$5 \times 10^{-7} = Y$$

Mar 18-8:21 AM