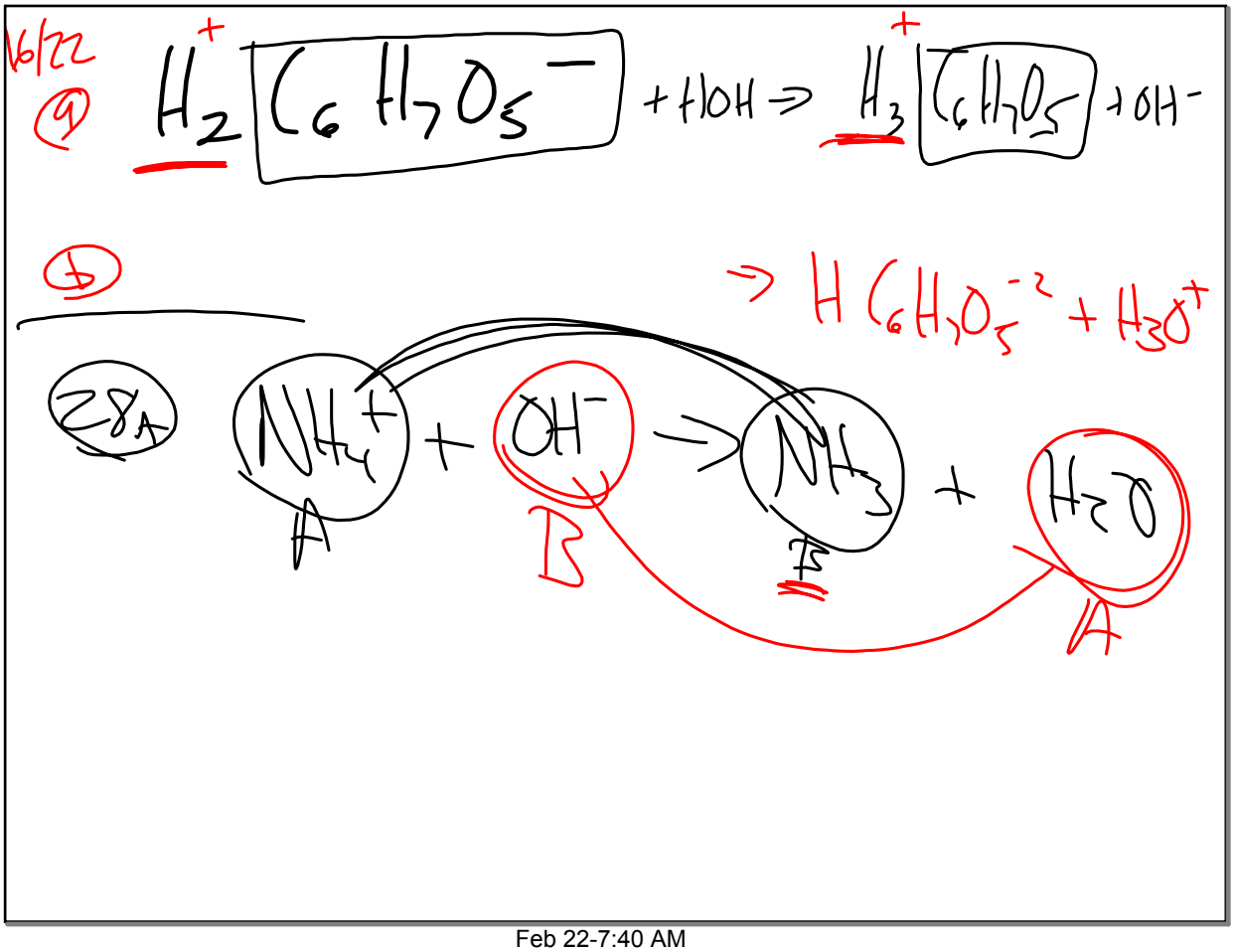
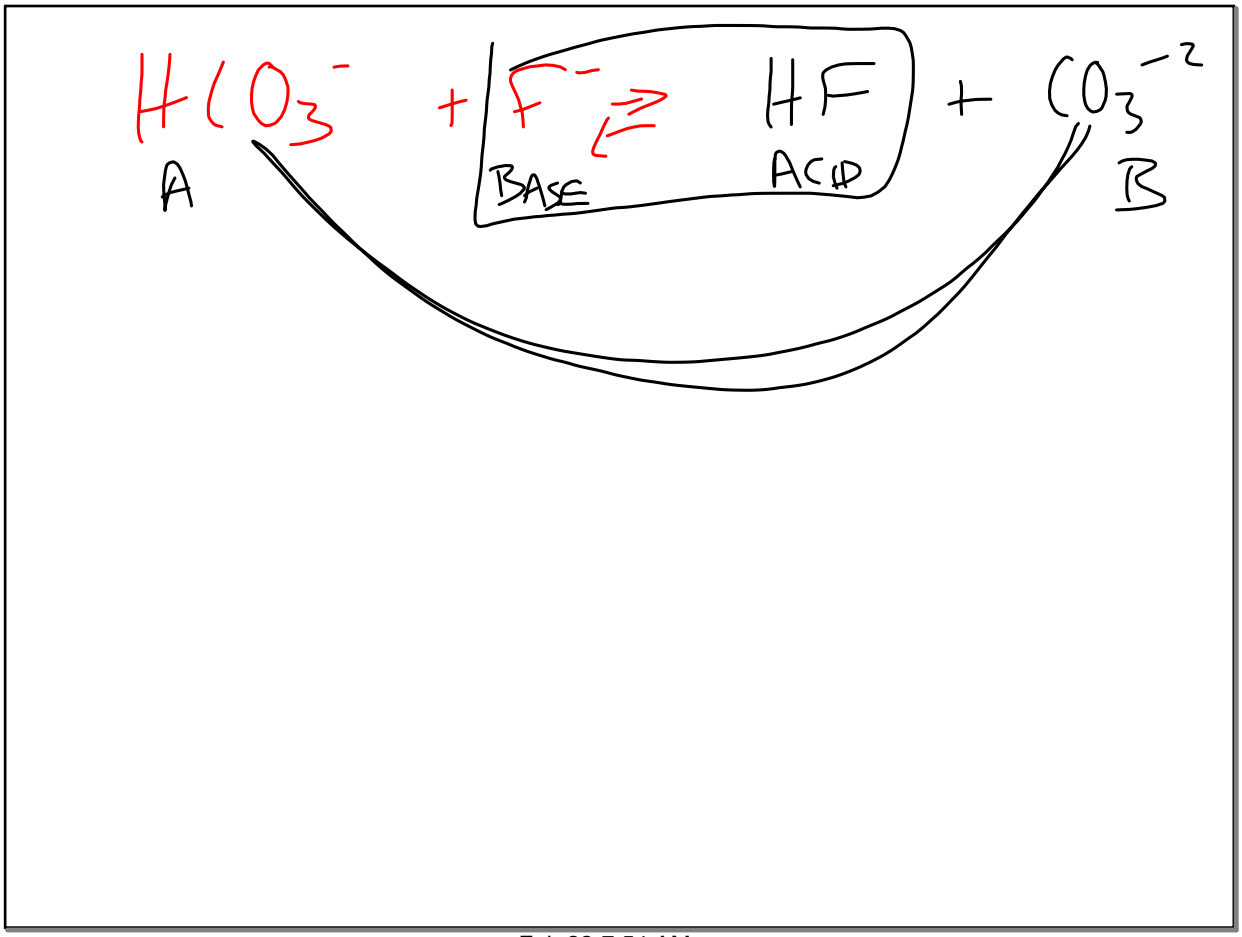


Feb 22-7:40 AM



Feb 22-7:54 AM

Exam 1

② $\ln A_t = -kt + \ln A_0$

$\ln 0.15 = -k(79) + \ln 1$

$k = 0.024\ min^{-1}$

Feb 22-8:00 AM

② $Rate = k[HCl]^3[CH_3CH(CH_2)]^1$

Feb 22-8:04 AM

(9)

	K	T
①	3	40°C
②	1	20°C

$$\ln \frac{K_1}{K_2} = \frac{E_a}{R}\left(\frac{1}{T_2} - \frac{1}{T_1}\right)$$

$$\ln \frac{3}{1} = \frac{E_a}{8.314 \times 10^{-3}}\left(\frac{1}{293} - \frac{1}{313}\right)$$

$$E_a = 41.8287 \text{ kJ}$$

Feb 22-8:08 AM

(12)

$$X \rightleftharpoons Y + \text{HEAT}$$

← EXO

$-\Delta H$

Feb 22-8:13 AM

(13) $C_6H_6(g) + 3H_2 \rightleftharpoons C_6H_{12}$

MOLES

	C_6H_6	$3H_2$	C_6H_{12}
I	1 mole	3 mole	0
Δ	−0.137	−3(0.137)	+0.137
E		2.589	0.137 mole

$M \times l = \text{mole}$

Feb 22-8:15 AM

(14)

	I_2	Br_2	$2IBr$
I	0.5	0.5	0
Δ	−0.42	−0.42	+0.84
E	0.08	0.08	0.84

MOLE RATIO

$$K = \frac{(IBr)^2}{(I_2)(Br_2)} = \frac{(0.84)^2}{(0.08)(0.08)}$$

Feb 22-8:19 AM

16 $2P_2 \rightleftharpoons P_4 + HEAT$

STRESS ADD

Destress Take away

NP →

Feb 22-8:22 AM

17 $PCl_5 \rightleftharpoons PCl_3 + Cl_2$

	PCl_5	PCl_3	Cl_2
I	2.74 atm	0	0
Δ	$-x$	$+x$	$+x$
E	$2.74-x$	x	x

MOLE RATIO

$$K_p = \frac{(PCl_3)(Cl_2)}{(PCl_5)} = \frac{1.8}{1} = \frac{(x)(x)}{2.74-x}$$

$$x^2 + 1.80x - 4.932 = 0$$

$x = 1.496$

Feb 22-8:35 AM

(18) $2\,NOBr \rightleftharpoons 2\,NO + Br_2$ $+30\,kJ$

(19) $H_2 + I_2 \rightleftharpoons 2HI$ $K_c = 50.2$

If $Q = \dfrac{(HI)^2}{(H_2)(I_2)} = \dfrac{(1.75*10^{-3})^2}{(1.75*10^{-3})(1.75*10^{-3})} = 1$ $Q = K$

Feb 22-8:42 AM

(21) $2SO_{2(g)} + O_{2(g)} \rightleftharpoons 2SO_{3(g)}$

$K_p = 3*10^{24}$

Find K_c @ 298 K

$K_p = K_c (RT)^{\Delta n}$

$K_c = \dfrac{K_p}{(RT)^{\Delta n}}$

$= \dfrac{3*10^{24}}{[(0.08206)(298)]^{-1}}$

$= 3*10^{24}[(0.08206)(298)]^{+1}$

Feb 22-8:49 AM

EC

(a) Rate = $K[Fe(CN)_6^{-3}]^2[I^-]^1$

(b) $1 * 10^{-5} = K\left(\frac{10^{-4}}{0.01}\right)^2\left(\frac{10^{-2}}{0.01}\right)^1$ 10^{-6}

$\frac{10^{-5}}{10^{-6}} = K = 10^1$

Feb 22-8:52 AM

$[H^+] > [OH^-]$ $[H^+] < [OH^-]$

$K_w = [H^+][OH^-] = 1 * 10^{-14}$ at 25°C

$H_2O_{(l)} \rightleftharpoons H^+_{(aq)} + OH^-_{(aq)}$

$pH = -\log[H^+]$ $pOH = -\log[OH^-]$

Feb 22-8:56 AM

$[H^+][OH^-] = 1 \times 10^{-14}$

$-\log\left([H^+][OH^-]\right) = -\log\left(1 \times 10^{-14}\right)$

$\log[H^+] + -\log[OH^-] = 14$

* $\boxed{pH + pOH = 14}$ * AT 25°C

Feb 22-9:04 AM

$[H^+][OH^-] = 1 \times 10^{-14}$

$pH + pOH = 14$

$pH = -\log(H^+)$ $pOH = -\log(OH^-)$

$pH = 3.76$

$pOH = 10.24$

Find $[H^+]$, $[OH^-]$, ~~pOH~~.

$pH = -\log(H^+)$

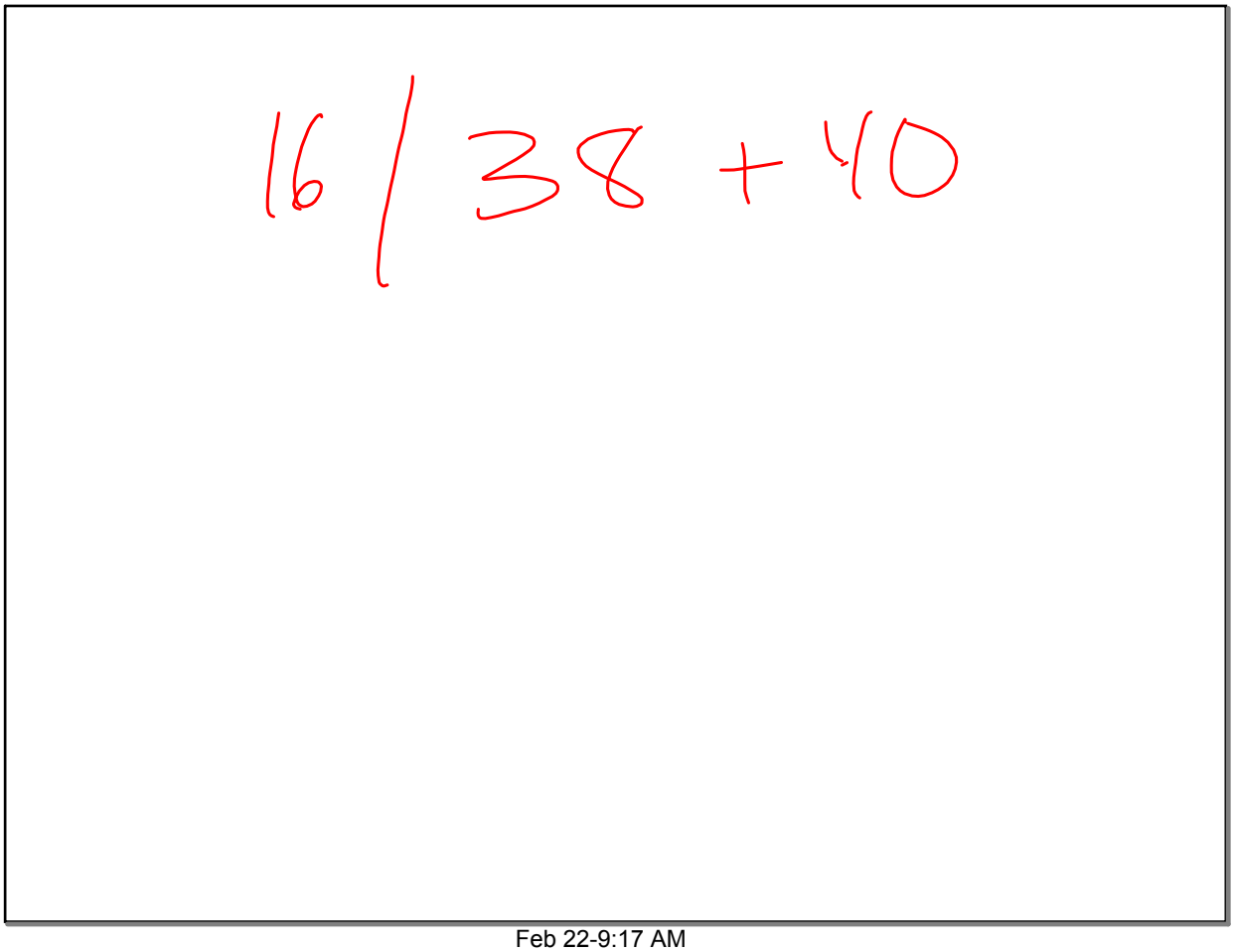
$3.76 = -\log(H^+)$ * Move − 1st

$-3.76 = \log(H^+)$

$[H^+] = 1.74 \times 10^{-4}$

$[OH^-] = 5.7 \times 10^{-11}$

Feb 22-9:06 AM



Feb 22-9:17 AM