(10) $KOH \rightarrow K^+ + OH^-$

0.075M 0.075M 0.075M

$K_w = [H^+][OH^-] = 1 \times 10^{-14}$ @ 25°

$\frac{(H^+)(0.075)}{0.075} = \frac{1 \times 10^{-14}}{0.075}$

May 11-7:44 AM

(11) moles A = moles B

$n_A M_A \times l_A = n_B M_B \times l_B$

$\frac{(1)0.02\,(25\,ml)}{0.085} = \frac{(1)(0.085)\,ml}{0.085}$

M = Moles / l

$NaHCO_3$ — $NaOH$ — Buffer → H_2CO_3

CO_2

$H_2O + CO_2 = H_2CO_3$

May 11-7:53 AM

OH^- HOH or H_2O

Base → Conj Acid

$HPO_4^{-2} + NH_4^+ \rightleftarrows H_2PO_4^- + NH_3$

B A A B

B A

$H_2PO_4^-$ → H_3PO_4

May 11-7:59 AM

(9) $HClO \rightarrow H^+ + ClO^-$

	HClO	H^+	ClO^-
I	0.0335	0	0
Δ	−x	+x	+x
E	0.0335−x	x	x

MOLE RATIO

$K_a = \frac{[H^+][ClO^-]}{[HClO]} = 3 \times 10^{-8}$

$\frac{(x)(x)}{0.0335} = 3 \times 10^{-8}$

$x = 3.17 \times 10^{-5}$

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

$= -\log(3.17 \times 10^{-5})$

May 11-8:05 AM

(20) $HOAc \rightarrow H^+ + OAc^-$

	$HOAc$	H^+	OAc^-
I	0.01	0	0.01
Δ	$-x$	$+x$	$+x$
E	$0.01-x$	x	$0.01+x$

common ion: $NaOAc \rightarrow Na^+ + OAc^-$, $0.01 \rightarrow 0.01 + 0.01$

% Ionized $\frac{1.8\times10^{-5}}{0.01} \times 100$

0.18%

$$K_a = \frac{[H^+][OAc^-]}{[HOAc]} = \frac{x(0.01+x)}{0.01-x} = 1.8\times10^{-5}$$

$-\log(H^+) = -\log(K_a)$ $\quad x = 1.8\times10^{-5} = [H^+]$ $\quad pH = -\log[H^+]$ $\quad 4.74$

$$pH = pK_a + \log\frac{b}{a}$$

$$pH = -\log(1.8\times10^{-5}) + \log\frac{0.01}{0.01}$$

4.74

May 11-8:11 AM

$$E = E^\circ - \frac{RT}{nF}\ln Q$$

$$Q = \frac{[Sn^{+2}][H_2]}{[H^+]^2(1)}$$

No Sn^{+2} (s)

May 11-8:22 AM

C_4H_{10} C_nH_{2n+2}

✓ C-C-C-C

✓ C-C-C
|
C

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EC 2015

$\Delta G = -RT\ln K$ ③ $\Delta G = \Delta H - T\Delta S$ ② $\Delta S = n\Sigma_{prod} - n\Sigma_{react}$ ①

① $\Delta H = [2(-395)] - [2(-297)+0] = -196\ kJ$

$\Delta S = [2(256)] - [2(249)+205] = -191\ J = -0.191\ kJ$

② $\Delta G = \Delta H - T\Delta S$

$\Delta G = -196 - 298(-0.191)$

$\Delta G = -139.082\ kJ$

③ $\Delta G = -RT\ln K$

$-139.082 = -(8.314\times10^{-3})(298)\ln K$

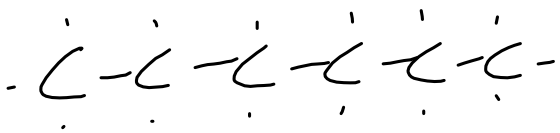
$K = 2.39\times10^{24}$

May 11-8:40 AM

(i) $t_{1/2} = \frac{0.693}{K}$

$\ln A_t = -Kt + \ln A_0$

May 11-8:53 AM

(ii) 

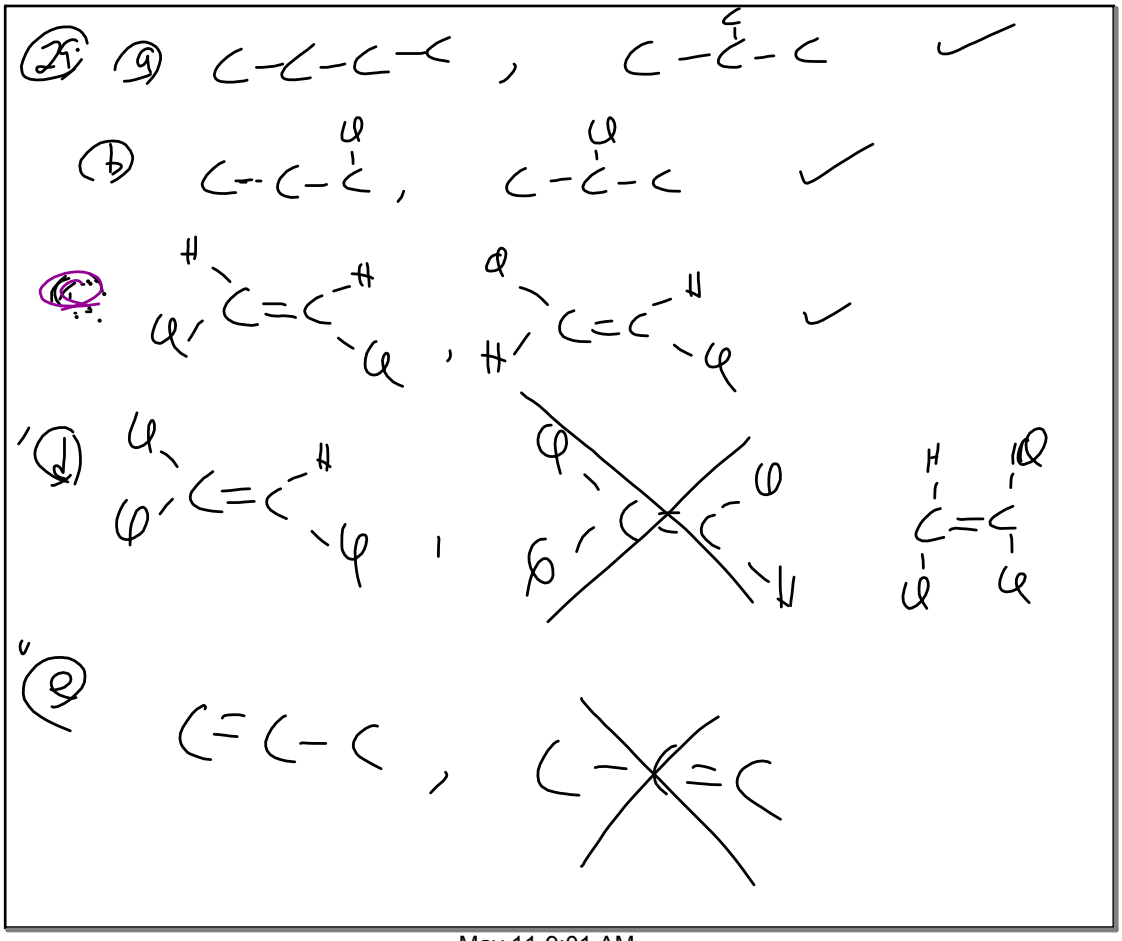
C_6H_{14}

Non-Polar molecule

MOST sol = N?

least sol = POLAR (H_2O) least sol

May 11-8:58 AM



May 11-9:01 AM

Final
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May 11-9:15 AM