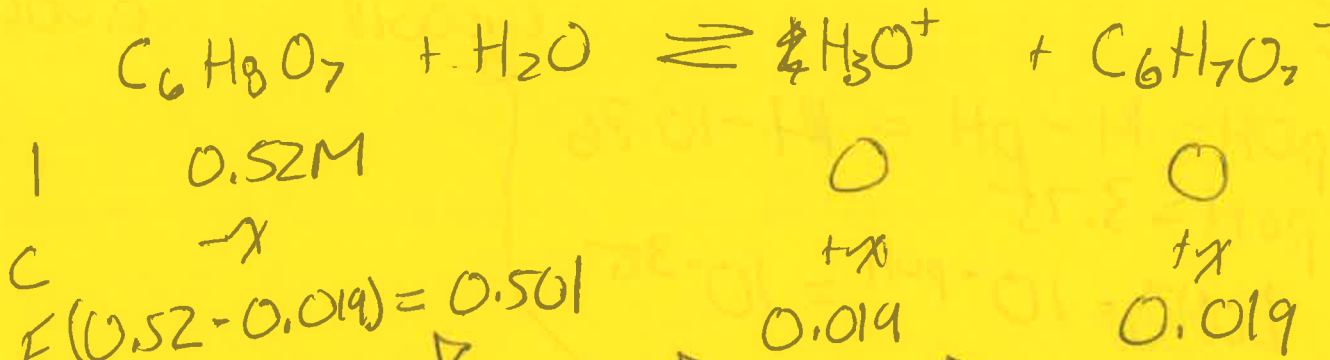


# Weak Acid : Base Hmwk

pg 512# 48, pg 523# 72, pg 526# 83, 84

48



$$E(0.52 - 0.019) = 0.501$$

$$[\text{H}_3\text{O}^+] = 10^{-\text{pH}} \\ = 10^{-1.72}$$

$$[\text{H}_3\text{O}^+] = 0.019$$

$$K_2 = \frac{[\text{H}_3\text{O}^+][\text{C}_6\text{H}_7\text{O}_7^-]}{[\text{C}_6\text{H}_8\text{O}_7]}$$

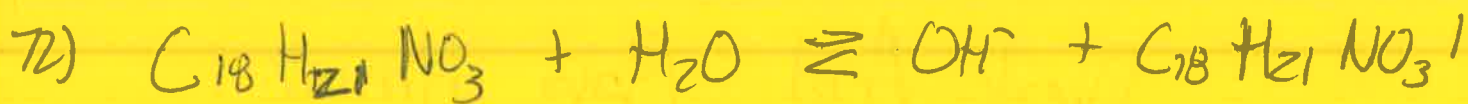
$$K_2 = \frac{[0.019]^2}{[0.501]}$$

$$K_2 = \underline{7.2 \times 10^{-4}}$$

$$\% \text{ ionization} = \frac{[\text{C}_6\text{H}_8\text{O}_7]_{\text{dissociated}}}{[\text{C}_6\text{H}_8\text{O}_7]_{\text{initial}}} \times 100$$

$$= \frac{(0.019)}{(0.52)} \times 100$$

$$= \underline{3.65\%}$$



I	0.020M	0	0
C	-x	+x	+x
E		0.00018	0.0008

$$\text{pOH} = 14 - \text{pH} = 14 - 10.26$$

$$\text{pOH} = 3.75$$

$$[\text{OH}^-] = 10^{-\text{pOH}} = 10^{-3.75}$$

$$[\text{OH}^-] = 0.00018$$

↳ so small we can use hundreds rule

$$K_b = \frac{[\text{OH}^-][\text{C}_{18}\text{H}_{21}\text{NO}_3^-]}{[\text{C}_{18}\text{H}_{21}\text{NO}_3]}$$

$$K_b = \frac{(0.00018)^2}{0.020}$$

$$K_b = 1.58 \times 10^{-6}$$

$$83) K_2 \text{ of hydro sulfuric acid} = 8.9 \times 10^{-8} \text{ (from chart)}$$

$$K_w = 1.0 \times 10^{-14}$$

$$K_b = K_w / K_2 = (1.0 \times 10^{-14}) \div (8.9 \times 10^{-8})$$

$$= \underline{1.13 \times 10^{-7}}$$

$$84) K_2 \text{ of hydrogen citrate } K_2 = 4.0 \times 10^{-7} \text{ (from chart)}$$

$$K_w = 1.0 \times 10^{-14}$$

$$K_b = K_w / K_2 = (1.0 \times 10^{-14}) \div (4.0 \times 10^{-7})$$

$$= \underline{2.5 \times 10^{-8}}$$