

17.3) K_{a2} $H_2PO_4^-$ HPO_4^{2-} (PH=?)

6.5g NaH_2PO_4 + 8g Na_2HPO_4 in 355ml

Na^+ $H_2PO_4^-$ Na^+ HPO_4^{2-}

① Find M

$\frac{6.5g NaH_2PO_4}{0.355L} \cdot \frac{1 \text{ mole } NaH_2PO_4}{126g NaH_2PO_4} = 0.15M NaH_2PO_4$ (A)

$\frac{8g Na_2HPO_4}{0.355L} \cdot \frac{1 \text{ mole } Na_2HPO_4}{142g Na_2HPO_4} = 0.16M Na_2HPO_4$ (B)

$PH = pK_{a2} + \log \frac{b}{a}$

$= -\log(6.2 \times 10^{-8}) + \log \frac{0.16}{0.15}$

$H_3PO_4 \rightarrow H_2PO_4^- K_{a1}$
 $H_2PO_4^- \rightarrow HPO_4^{2-} K_{a2}$
 $HPO_4^{2-} \rightarrow PO_4^{3-} K_{a3}$

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Buffers 0.3 mole $H_2C_2H_3O_2$ + 0.3 mole $Na_2C_2H_3O_2$

H_2OAc acetate $NaOAc$ (1 soln)

PH Buffer = 4.74

② Calc pH after 0.02 mole NaOH is added

Neutralization \rightarrow USE MOLES

SB = 0.02 mole OH^-

I	H_2OAc	OH^-	\rightarrow	$HOAc$	OAc^-
	0.3	0.02		0.3	
Δ	-0.02	-0.02			+0.02
E	0.28	0		0.32	

0.28M H_2OAc 0.32M OAc^-

after neutralization

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

$PH = -\log(1.8 \times 10^{-5}) + \log \frac{0.32}{0.28} = 4.8$

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HW

17.27

Mar 6-8:45 AM