What is the pH of a mixture of 75ml of 0.42M NaH2PO4 (pK =6.86) and 150mL of 0.58M Na2HPO4?

**Solution**

$n(NaH_2PO_4) = 0.42M \cdot 0.075L = 0.0315 \text{ mols}$

$n(Na_2HPO_4) = 0.58M \cdot 0.15L = 0.087 \text{ mols}$

$NaH_2PO_4 = \text{weak acid} = A = 0.0315 \text{ mols}$

$Na_2HPO_4 = \text{conjugate base} = B = 0.087 \text{ mols}$

$pH = pKa + \log\frac{B}{A} = 6.86 + \log\left(\frac{0.087}{0.0315}\right)$

$= 7.3$

**Answer:** $pH = 7.3$