

## Answer on Question#68863 – Chemistry – General chemistry

### Question:

1. Give the names or formulas of a suitable chemical which could be used to prepare a buffered solution with a pH of 8.45

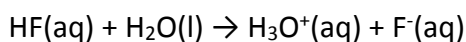
### Answer:

Borax ( $\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$ ) and hydrochloric acid (HCl) can be used for preparing the buffered solution with a pH of 8.45.

### Question:

2. Calculate the pH of a buffered solution of 850mL which contains .65 m HF. ( $K_a=6.6 \times 10^{-4}$ ) and 34.7g of NaF.

### Solution:



$$[\text{H}_3\text{O}^+] = \frac{K_a[\text{F}^-(\text{aq})]}{[\text{HF}(\text{aq})]}$$

$$[\text{F}^-(\text{aq})] = \frac{m(\text{HF})}{M(\text{HF})} = \frac{34.7\text{g}}{20.01\text{g/mol}} = 1.734\text{ mol}$$

$$[\text{HF}] = 0.65 \frac{\text{mol}}{\text{L}} \times 0.85\text{L} = 0.5525\text{ mol}$$

$$[\text{H}_3\text{O}^+] = \frac{6.6 \times 10^{-4} \frac{\text{mol}}{\text{L}} \times 1.734\text{ mol}}{0.5525\text{ mol}} = 0.00207$$

$$\text{pH} = -\lg [\text{H}_3\text{O}^+(\text{aq})] = -\lg 0.00207 = 2.68$$

### Answer:

2.68