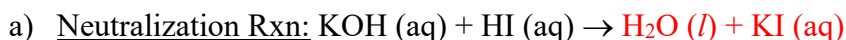


- 1) Determine whether aqueous solutions of the given salts form acidic neutral or basic solutions. To do so, fill in this chart fully. Consult Chart H to determine if the ions should be acidic, neutral, or basic.

Salt	What ions does this salt consist of?	If one of the ions reacts with water, show the equation for that chemical reaction.	Is the salt solution acidic, neutral or basic?
a) LiF	$\text{Li}^+$ & $\text{F}^-$	$\text{F}^- (\text{aq}) + \text{H}_2\text{O} (\text{l}) \rightleftharpoons \text{HF} (\text{aq}) + \text{OH}^- (\text{aq})$	B
b) $\text{KHSO}_4$	$\text{K}^+$ & $\text{HSO}_4^-$	$\text{HSO}_4^- (\text{aq}) + \text{H}_2\text{O} (\text{l}) \rightleftharpoons \text{SO}_4^{2-} (\text{aq}) + \text{H}_3\text{O}^+ (\text{aq})$	A
c) $\text{Ca}(\text{NO}_3)_2$	$\text{Ca}^{2+}$ & $\text{NO}_3^-$	None	N
d) $\text{Na}_2\text{SO}_3$	$\text{Na}^+$ & $\text{SO}_3^{2-}$	$\text{SO}_3^{2-} (\text{aq}) + \text{H}_2\text{O} (\text{l}) \rightleftharpoons \text{HSO}_3^- (\text{aq}) + \text{OH}^- (\text{aq})$	B
e) $\text{MgBr}_2$	$\text{Mg}^{2+}$ & $\text{Br}^-$	None	N

- 2) For the following acid & base titrations, write the titration reaction, determine which ion, if either hydrolyzes, and indicate if the pH at the equivalence point would be acidic, neutral, or basic:

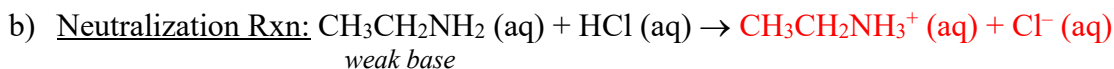


What ions are in the salt?  $\text{K}^+$ ,  $\text{I}^-$

If one of the ions undergoes hydrolysis, write the equation below:

**Cation:  $\text{K}^+$  does not hydrolyze; Anion  $\text{I}^-$  does not hydrolyze**

Is the solution at the equivalence point acidic, neutral or basic? Neutral

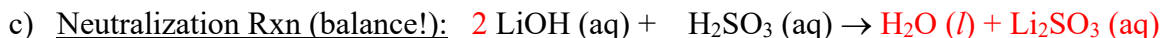


What ions are in the salt?  $\text{CH}_3\text{CH}_2\text{NH}_3^+$ ,  $\text{Cl}^-$

If one of the ions undergoes hydrolysis, write the equation below:

$\text{CH}_3\text{CH}_2\text{NH}_3^+ (\text{aq}) + \text{H}_2\text{O} (\text{l}) \rightleftharpoons \text{CH}_3\text{CH}_2\text{NH}_2 (\text{aq}) + \text{H}_3\text{O}^+ (\text{aq})$

Is the solution at the equivalence point acidic, neutral or basic? Acidic



What ions are in the salt?  $\text{Li}^+$ ,  $\text{SO}_3^{2-}$

If one of the ions undergoes hydrolysis, write the equation below:

$\text{SO}_3^{2-} (\text{aq}) + \text{H}_2\text{O} (\text{l}) \rightleftharpoons \text{HSO}_3^- (\text{aq}) + \text{OH}^- (\text{aq})$

Is the solution at the equivalence point acidic, neutral or basic? Basic

- 3) For all three of the titration curves shown in the notes, the pH increases drastically around the equivalence point. Explain why the pH increases so drastically when one additional drop of NaOH is added to a solution that is exactly at its equivalence point.

**One drop before the EP, the solution contains excess  $\text{H}_3\text{O}^+$ , so has a low pH. One drop after the EP, there is excess  $\text{OH}^-$  with a high pH. The rapid change from  $\text{H}_3\text{O}^+$  to  $\text{OH}^-$  causes the drastic increase in pH.**