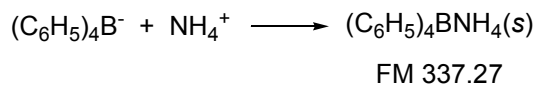
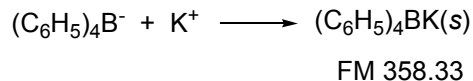
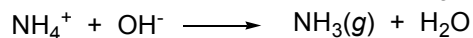


**Chapter 27 Example Problems**

1. (Harris 27-17) A 1.475-g sample containing  $\text{NH}_4\text{Cl}$  (FM 53.492),  $\text{K}_2\text{CO}_3$  (FM 138.21), and inert ingredients was dissolved to give 0.100 L of solution. A 25.0-mL aliquot was acidified and treated with excess sodium tetraphenylborate,  $\text{Na}^+\text{B}(\text{C}_6\text{H}_5)_4^-$ , to precipitate  $\text{K}^+$  and  $\text{NH}_4^+$  ions completely:



The resulting precipitate amounted to 0.617 g. A fresh 50.0-mL aliquot of the original solution was made alkaline and heated to drive off all the  $\text{NH}_3$ :



It was then acidified and treated with sodium tetraphenylborate to give 0.554 g of precipitate. Find the weight percent of  $\text{NH}_4\text{Cl}$  and  $\text{K}_2\text{CO}_3$  in the original solid.

2. (Harris 27-18) A mixture containing only  $\text{Al}_2\text{O}_3$  (FM 101.96) and  $\text{Fe}_2\text{O}_3$  (FM 159.69) weighs 2.019 g. When heated under a stream of  $\text{H}_2$ , the  $\text{Al}_2\text{O}_3$  is unchanged, but the  $\text{Fe}_2\text{O}_3$  is converted to metallic Fe plus  $\text{H}_2\text{O}(\text{g})$ . If the residue weighs 1.774 g, what is the weight percent of  $\text{Fe}_2\text{O}_3$  in the original mixture?