

# SALTS I

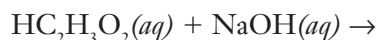
NAME \_\_\_\_\_

SECTION \_\_\_\_\_

1. Define the term *salt*.
2. Go to [http://introchem.chem.okstate.edu/DCICLA/ph\\_meter.html](http://introchem.chem.okstate.edu/DCICLA/ph_meter.html).<sup>†</sup> Adjust the “solutions” settings to “salts 1” and the concentration to  $10 \times 10^{-2}$  M, choose the salt, and complete the following table.

Solution	pH	Equilibrium $[H^+]$ or $[OH^-]$	Acidic, Basic, or Neutral
0.100 M NaCl			
0.100 M $NaC_2H_3O_2$			
0.100 M $NH_4Cl$			

3. Predict the product of the neutralization reactions,



4. In general, what is the acid–base property of any salt formed in the reaction between a strong acid and a strong base?

<sup>†</sup> If you do not have access to this DCI's Web site link, your instructor will provide you with the data you will need.

5. In general, what is the acid–base property of any salt formed in the reaction between a strong acid and a weak base?
6. In general, what is the acid–base property of any salt formed in the reaction between a weak acid and a strong base?
7. a. Write the dissociation equation which describes what happens when  $\text{NaC}_2\text{H}_3\text{O}_2(s)$  is added to water.
- b. Write the equation that describes the acidic character of  $\text{Na}^+(aq)$ . Write the equilibrium expression and estimate  $K_a$  for  $\text{Na}^+(aq)$ .
- c. Write the equation which describes the basic character of  $\text{C}_2\text{H}_3\text{O}_2^-(aq)$ . Write the equilibrium expression and calculate the  $K_b$  for  $\text{C}_2\text{H}_3\text{O}_2^-(aq)$ .
- d. Which of the two ions,  $\text{Na}^+(aq)$  or  $\text{C}_2\text{H}_3\text{O}_2^-(aq)$ , affects the pH of the solution? Explain why.
- e. Predict the products when  $\text{KCN}(s)$  is added to water. Will the pH of the solution formed when the salt is added to water be greater or less than 7?

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8. a. Write the dissociation equation which describes what happens when  $\text{NH}_4\text{Cl}(s)$  is added to water.
- b. Write the equation which describes the acidic character of  $\text{NH}_4^+(aq)$ . Write the equilibrium expression and calculate  $K_a$  for  $\text{NH}_4^+(aq)$ .
- c. Write the equation which describes the basic character of  $\text{Cl}^-(aq)$ . Write the equilibrium expression and estimate  $K_b$  for  $\text{Cl}^-(aq)$ .
- d. Which of the two ions,  $\text{NH}_4^+(aq)$  or  $\text{Cl}^-(aq)$ , affects the pH of the solution? Explain why.
- e. Predict the products when  $\text{CH}_3\text{NH}_3\text{NO}_3(s)$  is added to water. Will the pH of the solution formed when the salt is added to water be greater or less than 7?