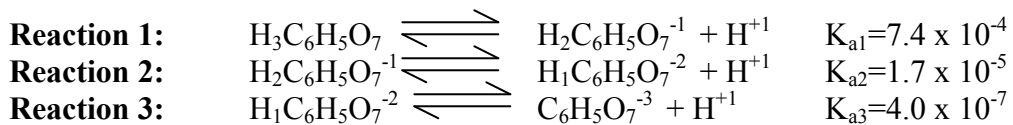


**ACIDS AND BASES I**

Name: \_\_\_\_\_

- 
1. Phenylacetic acid ( $\text{C}_6\text{H}_5\text{CH}_2\text{COOH}$ ) is one of the substances that accumulates in the blood of people with phenylketonuria, an inherited disorder that can cause mental retardation or even death. A 0.085M solution of  $\text{C}_6\text{H}_5\text{CH}_2\text{COOH}$  has a pH of 2.68. Calculate the  $K_a$  value for this acid.

2. Citric acid, which is present in citrus fruits, is a triprotic acid. Calculate the pH and the citrate ion ( $\text{C}_6\text{H}_5\text{O}_7^{-3}$ ) concentration for a 0.050M solution of citric acid. Explain any approximations or assumptions that you make in your calculations.



Determine the amount of  $\text{H}^{+1}$  produced in step 1, then using the information from step 1 complete the calculation for step 2, and finally step 3.