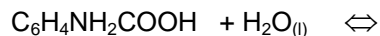
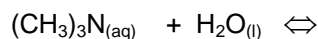


## Weak Acid-Weak Base Problems – Set II

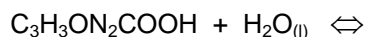
1.  $C_6H_4NH_2COOH$ , para-aminobenzoic acid (PABA), is used in some sunscreen agents. Calculate the  $K_a$  of this acid, if a 0.06 M solution has a measured pH of 3.1. Start by writing an equation that represents an equilibrium solution of PABA. **(answer:  $1.0 \times 10^{-5}$ )**



2. Trimethylamine,  $(CH_3)_3N$ , is a gas with a fishy, ammonia-like odor. The  $K_b$  of trimethylamine is  $3.15 \times 10^{-5}$ . Calculate the pH of an aqueous 0.20 M trimethylamine basic solution. Start by writing an equilibrium equation that represents the system. **(answer: 11.4)**



3. Barbituric acid,  $C_3H_3ON_2COOH$ , is used to prepare various barbiturate drugs (used as sedatives). Given:  $K_a = 9.8 \times 10^{-5}$ , calculate the percent ionization of a 0.5 M barbituric acid solution. **(answer: 1.4 %)**



4. A 0.2 M solution of a weak acid, HX, is 12% ionized. Calculate the  $K_a$  of this acid. **(answer:  $3.27 \times 10^{-3}$ )**



5. (a) Calculate the pH of a 1.0 M  $H_2S$  solution.  $K_a = 1.0 \times 10^{-7}$ . **(answer: 3.5)**



- (b) Determine the percent ionization of a 1.0 M  $H_2S$  solution. **(answer: 0.0316 %)**