Name: Date: Period: Seat #:

☐ **Buffer basics**

What could you mix with 100. mL of 2.00 $\underline{M}$ HNO$_2$ (nitrous acid) to make a buffer?

What is the pH of the best buffer made from nitrous acid, HNO$_2$? K_a of HNO$_2$ = 4.0 x 10^{-4}.

☐ **Adjusting the pH of a buffer**

The weak acid, HCN, could be used to make a buffer. The K_a for HCN is 6.2 x 10^{-10}.
What is the pH of the best buffer made from HCN?

What ratio of [HCN] to [CN$^-$] is needed to have a buffer with pH = 9.00?

☐ **Multiple Choice Question:**

Which of the following mixtures would result in a buffer solution?
   I.   10 mL 0.20 $\underline{M}$ HCl and 10 mL 0.40 $\underline{M}$ NH$_3$
   II.   10 mL 0.20 $\underline{M}$ HF and 10 mL 0.20 $\underline{M}$ NaF
   III.   10 mL 0.40 $\underline{M}$ HC$_2$H$_3$O$_2$ and 10 mL 0.20 $\underline{M}$ NaOH

   A)   II only
   B)   II and III only
   C)   I and III only
   D)   I, II and III
   E)   None of these will result in a buffer solution.