

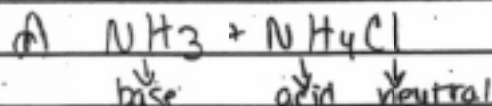
8C₂

NH₃:

c) $K_a \times K_b = K_w$ $\frac{1 \times 10^{-14}}{1.8 \times 10^{-5}}$ $K_a \approx 5 \times 10^{-10}$ $\log(5 \times 10^{-10}) = -9.3$

HCl = strong acid : NO K_a

Use Bromothymol blue - half way between 0 and 10 is 5.
 0.1 M NH₃ and 0.2 M HCl were used, so you need
 less HCl, so 7 is better than 5 and 10



NH₃ and NH₄⁺ are conjugates, so the
 solution is neutral

END OF EXAMINATION

THE FOLLOWING INSTRUCTIONS APPLY TO THE BACK COVER OF THE SECTION II BOOKLET.

- CIRCLE THE NUMBERS OF THE FREE-RESPONSE QUESTIONS YOU ANSWERED AS REQUESTED ON THE BOTTOM OF THE BACK PAGE.
- MAKE SURE YOU HAVE COMPLETED THE IDENTIFICATION INFORMATION AS REQUESTED ON THE BACK OF THE SECTION II BOOKLET.
- CHECK TO SEE THAT YOUR AP NUMBER APPEARS IN THE BOX(ES) ON THE BACK COVER.
- MAKE SURE YOU HAVE USED THE SAME SET OF AP NUMBER LABELS ON ALL AP EXAMINATIONS YOU HAVE TAKEN THIS YEAR.