

\[
2) \quad 0.03 \, \text{L} \times \frac{1 \, \text{mol}}{L} = 0.03 \, \text{mol} \\
\times 0.05 \, \text{mol} \times \frac{2 \, \text{mol}}{2 \times 10^{-2} - \frac{3 \times 10^{-3} \text{L}}{2 \times 10^{-2}}} = 1.5 \times 10^{-2} = 0.015 \, \text{L} = 1.5 \, \text{mL}
\]

\[
\text{weak base} \quad \text{weak acid}
\]

[1] \[ \text{NH}_3 \quad \text{NH}_4^+ \quad \text{basic} \quad \text{since NH}_3 \text{ is a stronger base than NH}_4^+ \text{ is an acid} \]

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.