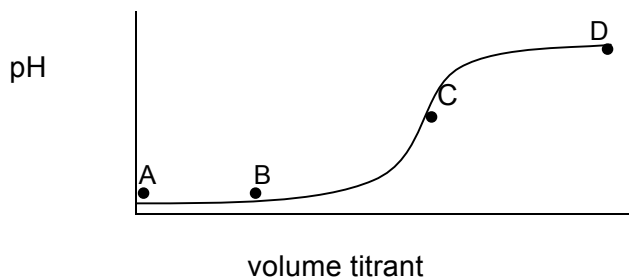


Part A: Titrations: Conceptual Practice

- 1) Consider the plot below for the titration of a benzoic acid with sodium hydroxide.
a) Label the different regions (A, B, C and D) on the chart



- b) The pH at point C is ... (Circle your answer)

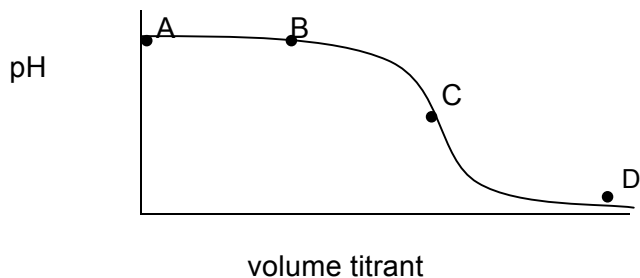
Greater than 7

Less than 7

Equal to 7

- c) How did you arrive at the answer above? Write a net ionic equation that describes the reaction at the equivalence point.

- 2) Consider the plot below for the titration of a pyridine with hydrochloric acid.
a) Label the different regions (A, B, C and D) on the chart



- b) The pH at point C is ... (Circle your answer)

Greater than 7

Less than 7

Equal to 7

- c) How did you arrive at the answer above? Write a net ionic equation that describes the reaction at the equivalence point.

Part B: Titration Weak Base-Strong Acid

- 2) Your PAL team will be generating a plot for the titration of a 100.00 mL sample of 0.250 M weak base (A^-) with 0.500 M HCl. The K_b of A^- is 3.6×10^{-4} .
- 1) Calculate the pH when a. no acid is added, b. after 15.0 mL of acid added, c. after 25.0 mL of acid added, d. after 50.0 mL of acid added, and e. after 100. mL of acid is added.
 - 2) Carry out the calculations on a separate sheet of paper.
 - 3) You can have each person do one calculation or two and combine your team's answers and plot them on the graph provided below.
 - 4) Label the following regions on your graph:
 - a) no added base (only weak base)
 - b) buffer region (both weak acid and conjugate base)
 - c) $\frac{1}{2}$ -way to equivalence point (midpoint of the titration)
 - d) equivalence point (only conjugate acid)
 - e) after equivalence point (excess strong acid)

Titration of 100.00 mL of 0.250 M A^- with 0.500 M HCl

