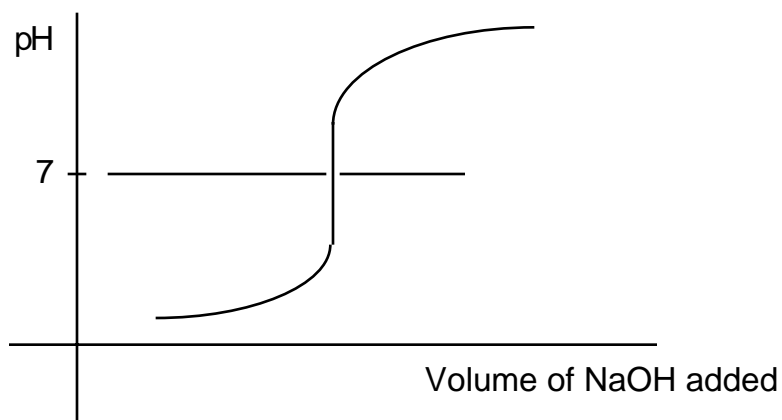


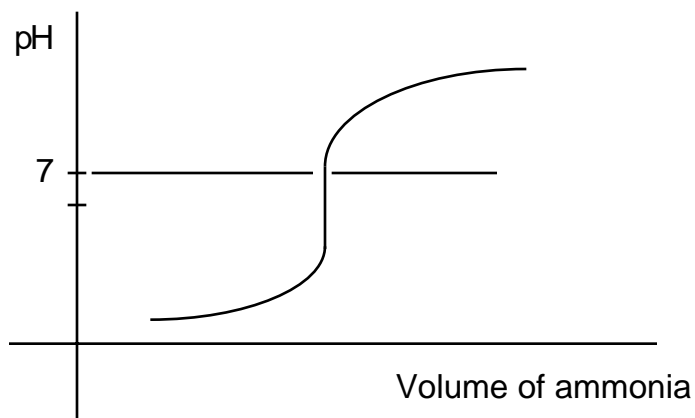
## Chem12 Titration Curves : Notes/W.S. - 220

If we draw the titration curve for a strong acid being titrated with a strong base (NaOH), we get the curve shown below.



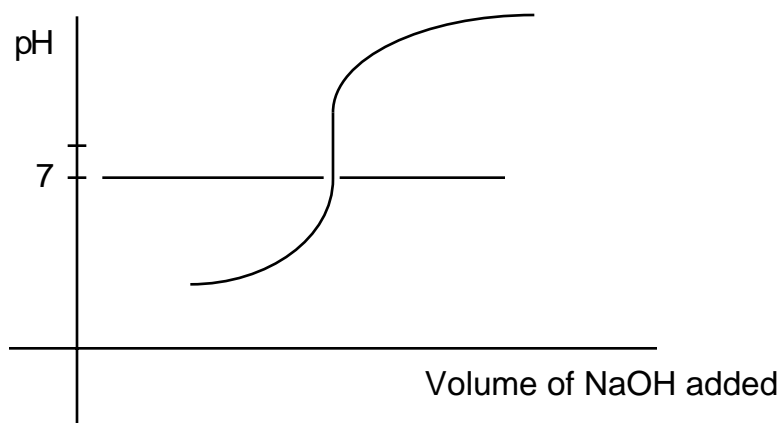
The **equivalence point** (moles of  $\text{OH}^-$  = moles of  $\text{H}_3\text{O}^+$ ) occurs at a pH of 7.0. Using an indicator that changes color at a pH of about 7.0, we can find the equivalence point.

If we titrate a strong acid such as HCl with a weak base like ammonia, we get a titration curve like the one shown below.



In this case, the equivalence point occurs at a pH below 7.0, so we must choose an indicator that changes color at a lower pH. The reason the equivalence point occurs at a lower pH is because the salt formed by the strong acid and weak base will be acidic.

If we titrate a weak acid such as acetic acid with a strong base such as NaOH, we get a curve similar to the one below.



In this case we must use an indicator that changes color at a pH that is greater than 7.0.

Exercises :

1)a) Draw the titration curve for a strong base being titrated with a strong acid.

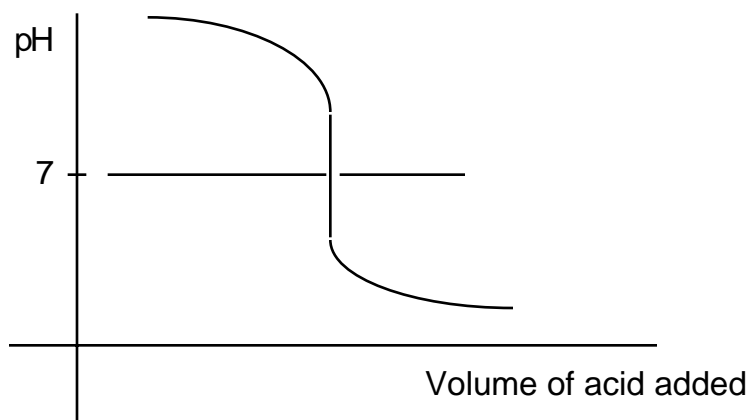
b) Give a suitable indicator for this titration.

2) Give a suitable indicator for :

a) A strong acid being titrated by a weak base.

b) A weak acid being titrated by a strong base.

Answers : 1)a)



b) Bromthymol blue, 2)a) Methyl red, b) Phenolphthalein.