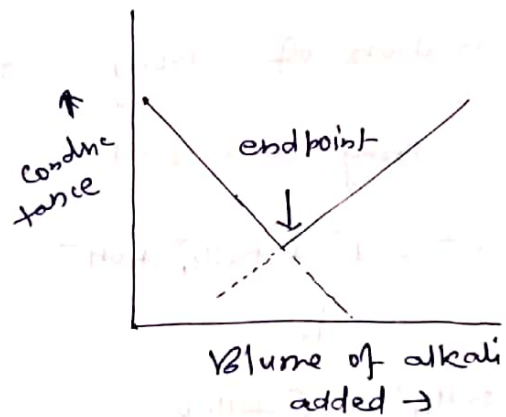
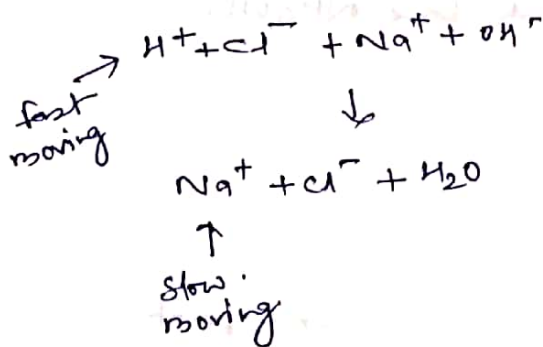


## Conductometric Titration :-

The principle involved in the conductometric titration is that electrical conductance depends upon the no. & mobility of ions. The conductance readings are noted (recorded) for the amount of various titrants. These two are plotted against to each other. The intersection of the line gives the end-point. The most common conductometric titrations are as follows:

### (1). Titration of strong acid against strong base -

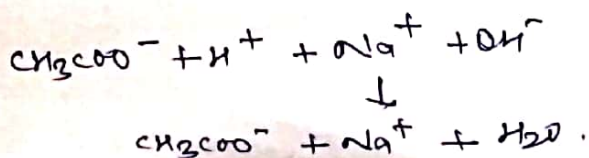
When strong alkali NaOH is added to strong acid HCl.



Since,  $\text{H}^+$  is replaced by  $\text{Na}^+$ , so, conductance initially decreases with the addition of alkali. But after end-point conductance increases. On further addition of alkali due to presence of fast moving  $\text{OH}^-$ .

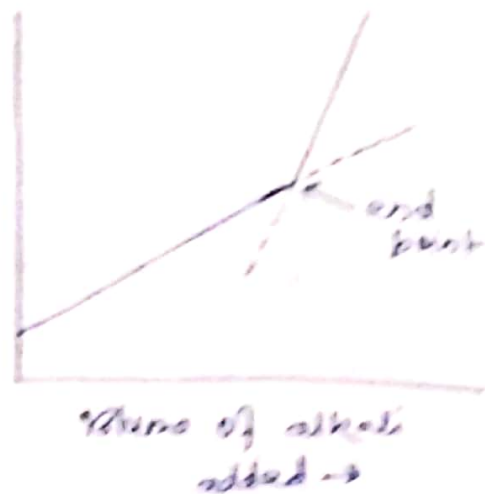
### (2). Titration of weak acid against strong base -

When weak acid  $\text{CH}_3\text{COOH}$  is added to strong base  $\text{NaOH}$ .



The conductance value initially increases with the addition of the salt ( $\text{CH}_3\text{COO}^-$ ). With further addition of  $\text{NaOH}$ , the conductance of highly ionised salt ( $\text{CH}_3\text{COONa}$ ) exceeds that of the weak acid which it releases.

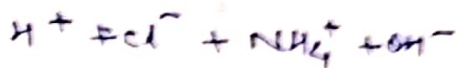
↑  
Conductance



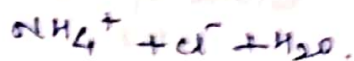
So, conductance increases and it increases rapidly at end point due to presence of  $\text{OH}^-$ .

(3). Titration of strong acid against weak base :-

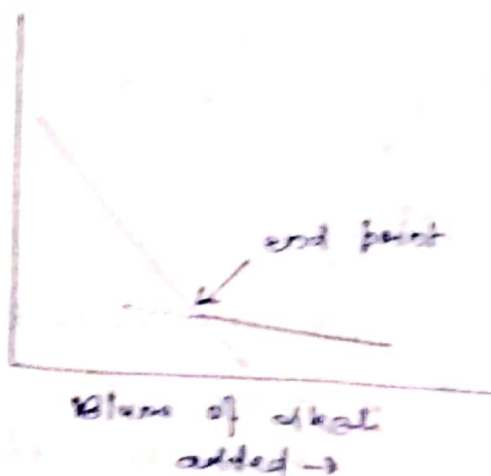
When strong acid  $\text{HCl}$  is added to weak base  $\text{NH}_4\text{OH}$ .



↓



↑  
Conductance



The conductance decreases when  $\text{NH}_4\text{OH}$  is added because fast moving  $\text{H}^+$  is replaced by slow moving  $\text{NH}_4^+$ . After end point is reached the conductance value remains practically constant on further addition of weak base ( $\text{NH}_4\text{OH}$ ).

Advantage :-

- ① Colourless solutions are easily titrated Conductometrically.
- ② No special precaution is needed at the end point.
- ③ Conductometrically titration may also be employed for very dilute solutions.
- ④ It is also used in the precipitation titration.
- ⑤ Conductometric titration is very much useful in the titration of weak acid against weak base.

Dr. A. R. Gupta.  
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