

## CHAPTER II

### PURPOSE OF INVESTIGATION

The purpose of this investigation was to study the applicability of the multiple linear regression analysis and the computer program ( SPSS/PC<sup>+</sup> ) to solve the multiple linear equation derived for the equivalence volumes determination of two weak acids mixtures which their  $\Delta pK_a$  values were less than 2 in potentiometric titration method.

The first part of this investigation was to improve the titration equation by using the activity dissociation constant ( $K_a^0$ ) of the weak acid instead of the concentration dissociation constant ( $K_a$ ), since the ionic strength of the solution would be changed during the course of titration.

The final part was to study factors affecting the accuracy and precision of the equivalence volumes of the individual weak acids obtained from the multiple linear regression analysis of binary acids mixtures such as : the difference between  $pK_a$  of each weak acids , the changes of ionic strength of solution during the course of titration, and the titration data range being interpreted to find the appropriate range which gave accurate and reproducible results in equivalence volumes determination.