

### 1.6.11 Resolution

This is a system suitability parameter that is used to calculate the efficiency of separation of two adjacent peaks to be well-resolved and it is expressed by the following equation:-

$$R = 2 \frac{(t_{R2} - t_{R1})}{(W_1 + W_2)} \dots\dots\dots \text{Eq. (1).}$$

Where:

R= Resolution.

$t_{R1}$ = Retention time of species 1.

$t_{R2}$ = Retention time of species 2.

$W_1$ = Peak width of species 1.

$W_2$ = Peak width of species 2.

### 1.6.12 Number of theoretical plate (N)

$$N = \frac{5.55t_R^2}{W_{1/2}^2} \dots\dots\dots \text{Eq (2).}$$

A theoretical plate in many separation processes is a hypothetical zone or stage in which two phases, such as the liquid and vapor phases of a substance, establish an equilibrium with each other. Such equilibrium stages may also be referred to as an equilibrium stage or a theoretical tray. The performance of many separation processes depends on having a series of equilibrium stages and is enhanced by providing more such