2. Normality (N):

Normality is equal to the gram equivalent weight of a solute per liter of solution.

$$N = \frac{No.of\ gram\ equivalent\ of\ the\ solute}{one\ liter\ of\ solution}$$

$$No.of\ grame\ equivalents = \frac{grams\ of\ solutes}{gram\ of equivalent\ weight\ of\ solute} = \frac{wt}{eq.wt}$$

The following formula is used for solid substances:

$$N = \frac{wt}{eq.wt} \times \frac{1000}{V(ml)}$$

As for the liquid substances, the following formula is used:

$$N = (d\ or\ sp.gr. \times \% \times 1000)/eq.wt$$

$$N_1\ V_1 = N_2\ V_2 \quad \ldots\ldots\ \text{dilution equation}$$

Calculation of equivalent weight (Eq.wt):

1. Equivalent weight of acids

$$\textit{Equivalent weight of an acid} = \frac{\textit{molecular weight}}{\textit{NO.of hydrogen ions}} = \frac{M.wt}{no.H^+}$$

Example:

$$For: HCl = \frac{36.5}{1} = 36.5$$

$$For: H_2SO_4 = \frac{98}{2} = 49$$

$$For: H_2S = \frac{34}{2} = 17$$

$$For: H_3PO_4 = \frac{98}{3} = 32.66$$

2. Equivalent weight of bases

$$\textit{Equivalent weight of a base} = \frac{\textit{molecular weight}}{\textit{No.of hydroxyl ions}}$$

$$NaOH = \frac{40}{1} = 40$$

$$Ca(OH)_2 = \frac{74}{2} = 37$$