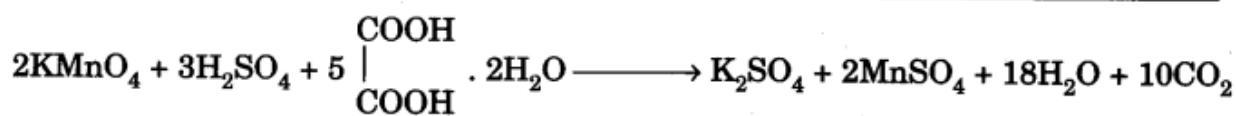
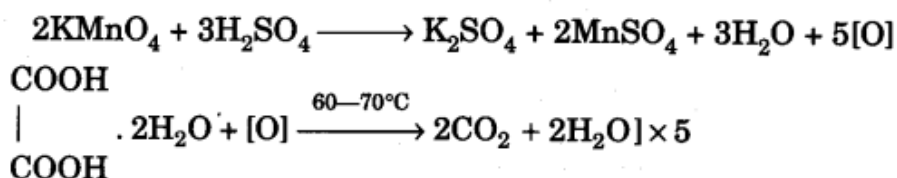


## Prepare N/20 Solution Of Oxalic Acid. Using this Solution, Find Out Strength & normality Of the Given Potassium Permanganate Solution

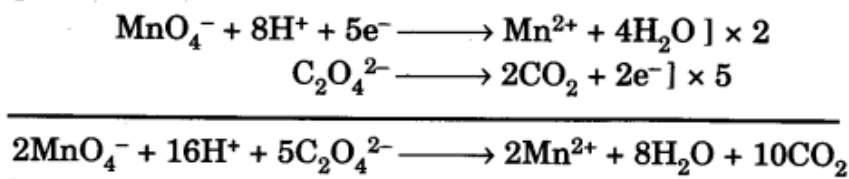
Prepare N/20 solution of oxalic acid. Using this solution, find out strength and normality of the given potassium permanganate solution.

### Chemical equations

#### Molecular equations



#### Ionic equations



### Indicator

$\text{KMnO}_4$  is a self-indicator.

### Endpoint

Colourless to permanent pink colour ( $\text{KMnO}_4$  in burette).

### Procedure

1. Rinse and fill the burette with the given  $\text{KMnO}_4$  solution.
2. Weigh exactly 1.58 g of oxalic acid crystals and dissolve in water to prepare 500 ml of its solution using a 500 ml measuring flask. Rinse the pipette with the N/20 oxalic acid solution and pipette out 20 ml of it in a washed titration flask.

3. Add one test tube (~ 20 ml) full of dilute sulphuric acid (~ 4 N) to the solution in , titration flask.
4. Note the initial reading of the burette.
5. Heat the flask to 60-70°C and add  $\text{KMnO}_4$  solution from the burette till a permanent light pink colour is just imparted to the solution in the titration flask.
6. Note the final reading of the burette.
7. Repeat the above steps 4-5 times to get three concordant readings.

### Observations

Normality of oxalic acid solution =  $\frac{N}{20}$  .

Volume of oxalic acid solution taken for each titration = 20.0 ml.

<b>S. No.</b>	<b>Initial reading of the burette</b>	<b>Final reading of the burette</b>	<b>Volume of the <math>\text{KMnO}_4</math> solution used</b>
1.	—	—	— ml
2.	—	—	— ml
3.	—	—	— ml
4.	—	—	— ml

Concordant volume =  $x$  ml (say)

## CALCULATIONS

(a) Normality of the  $\text{KMnO}_4$  solution

$x$  ml of the given  $\text{KMnO}_4$  solution are equivalent for 20 ml of  $\frac{N}{20}$  oxalic acid solution.

Applying normality equation,

$$\begin{array}{ccc} N_1 V_1 & = & N_2 V_2 \\ \text{Oxalic acid} & & \text{KMnO}_4 \end{array}$$

$$\frac{1}{20} \times 20 = N_2 \times x$$

$$\therefore \text{Normality of } \text{KMnO}_4, N_2 = \frac{1}{x}.$$

(b) Strength of the  $\text{KMnO}_4$  solution

Strength (in g/litre) = Normality  $\times$  Eq. mass

$$= \frac{1}{x} \times 31.6$$

[ $\because$  Eq. mass of  $\text{KMnO}_4 = 31.6$ ]

### Instructions for the Preparation of Solutions

Provide the following :

1. Oxalic acid crystals
2.  $N/20$   $\text{KMnO}_4$  solution (1.58 g/litre)
3.  $4N$   $\text{H}_2\text{SO}_4$ .