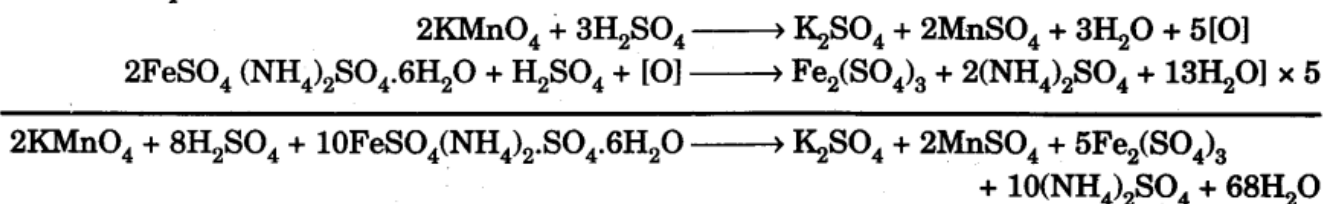


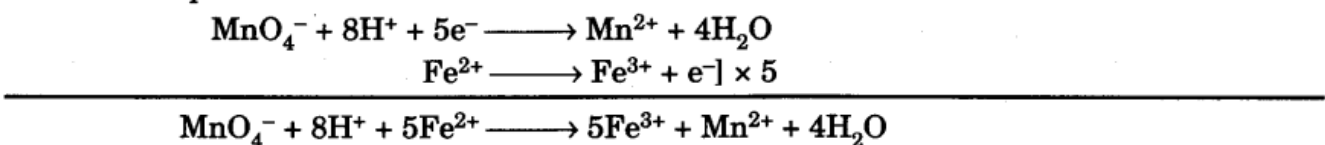
Prepare N/20 Mohr's salt Solution. Using this Solution, Determine the Normality & Strength of the Given Potassium Permanganate Solution

Chemical Equations

Molecular equations



Ionic equations



Indicator

KMnO₄ is a self-indicator.

End Point

Colourless to permanent pink (KMnO₄ in burette).

Procedure

1. Rinse and fill the burette with the given KMnO₄ solution.
2. Weigh exactly 4.90 g of Mohr's salt crystals and dissolve in water to prepare exactly 250 ml of solution using a 250 ml measuring flask. Rinse the pipette with the N/20 Mohr's salt solution and pipette out 20.0 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. Now add KMnO₄ solution from the burette till a permanent light pink colour is imparted to the solution in the titration flask on addition of a last single drop of KMnO₄ solution.
6. Note the final reading of the burette.
7. Repeat the above steps 4-5 times to get three concordant readings.

Observations

Normality of Mohr's salt solution = N/20

Volume of Mohr's salt solution taken for each titration = 20.0 ml

S. No.	Initial reading of the burette	Final reading of the burette	Volume of the KMnO_4 solution used
1.	—	—	— ml
2.	—	—	— ml
3.	—	—	— ml
4.	—	—	— ml

Concordant volume = x ml (say).

Calculations

(a) Normality of the KMnO_4 solution

x ml of the given KMnO_4 solution are equivalent to 20 ml of $N/20$ Mohr's salt solution.
Applying normality equation.

$$\begin{array}{ccc} N_1 V_1 & = & N_2 V_2 \\ \text{Mohr's salt} & & \text{KMnO}_4 \end{array}$$

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

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

(b) Strength of the KMnO_4 solution

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

$$= \frac{1}{x} \times 31.6 \quad [\because \text{Eq. mass of } \text{KMnO}_4 = 31.6]$$

Instructions for the Preparation of Solutions

Provide the following solutions :

1. Mohr's salt crystals
2. $N/20$ KMnO_4 solution (1.58 g/litre)
3. $4N$ H_2SO_4 .