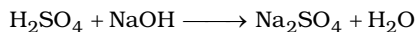
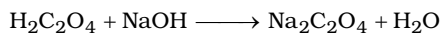
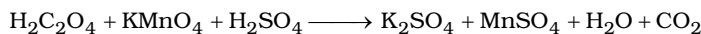


Paragraph for Question No. 122 to 125

The solution of oxalic acid and sulphuric acid reacts with NaOH according to the reactions



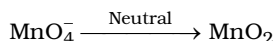
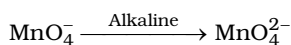
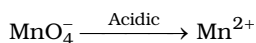
While the same mixture of acid solution is titrated with KMnO_4 solution which will react with oxalic acid (redox titration) in the presence of H_2SO_4 as



The reaction of oxalic acid with KMnO_4 is very slow therefore the oxalic acid solution is heated to 70°C initially.

Once the reaction has started, its rate automatically increases due to the formation of Mn^{2+} ions which catalyze the reaction.

KMnO_4 behaves as an oxidant in all three mediums



122. In the permanganate titration, the solution of reductant is always made acidic by adding H_2SO_4 rather than HCl or HNO_3 because : ▶

- (A) HCl is a reducing agent and it may get oxidized itself resulting into decrease in the volume of KMnO_4 equivalent to the reducing agent under estimation.
- (B) HNO_3 is an oxidizing agent and it may get reduced into consumption of more volume of KMnO_4 for the end point.
- (C) H_2SO_4 (dil.) is neither oxidizing nor reducing agent.
- (D) HCl and HNO_3 are more costlier than H_2SO_4 .

123. If 1.34 g $\text{Na}_2\text{C}_2\text{O}_4$ is dissolved in 500 mL of water and this solution is titrated with $\frac{M}{10}$ KMnO_4 solution in acidic medium, the volume of KMnO_4 used is :

- (A) 200 mL (B) $\frac{200}{3}$ mL (C) 40 mL (D) none of these

124. In acid base titration using the above mentioned acids 100 mL $\frac{M}{10}$ NaOH is used which of the following is correct ?

- (A) 5×10^{-3} moles of $\text{H}_2\text{C}_2\text{O}_4$ (B) 5×10^{-3} moles of $\text{H}_2\text{C}_2\text{O}_4 + \text{H}_2\text{SO}_4$
- (C) 5×10^{-3} moles of H_2SO_4 (D) All of the above

125. 10 g of oxalate was dissolved in 300 mL of solution. This solution required 250 mL of $\left(\frac{M}{10}\right)$ KMnO_4 in acidic medium for complete oxidation. The percentage purity of oxalate ion in the salt is :

- (A) 55% (B) 57.8% (C) 45% (D) None of these