Compare the pH of solutions of hydrochloric acid and acetic acid having same concentration.

Requirements

Test tubes, glass rod, universal indicator solution, 0.1 M HCl, 0.01 M HCl, 0.1 M CH_3COOH and 0.01 M CH_3COOH.

Theory

A strong acid is completely ionised in aqueous solution. It produces higher conccentration of hydrogen ions for a given concentration of the acid as compared with a weak acid and hence has lower pH.

Procedure

1. Take four clean and dry test tubes and half fill each of the tubes with one of the acid solutions.
2. Add 3-4 drops of universal indicator to each test tube and swirl the solutions until the colours are uniform.
3. Compare the colour of each solution with the 'pH indicator chart' and estimate the pH of each solution and record the observations in the data table.

Observations And Results

Solution	Colour produced in the solution by universal indicator	Approximate pH
0.1 M HCl		
0.1 M CH_3COOH		
0.01 M HCl		
0.01 M CH_3COOH		

Conclusion

The pH of a solution of HCl (a strong acid) is lower than the pH of a solution of CH_3COOH (a weak acid) having same concentration.