EXPERIMENT-6

TO DETERMINE THE pH OF SOME FRUIT JUICES:

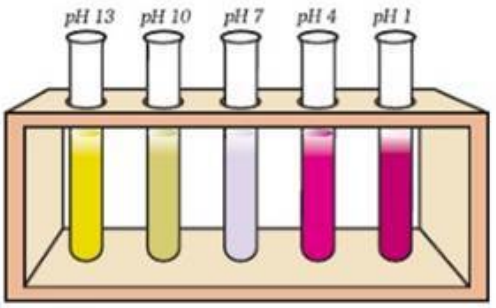
AIM:

To determine the pH of some fruit juices.

THEORY:

Several dyes show different colours at different pH. These act as acid-base indicators. Solution of a mixture of dyes can be used to obtain approximate pH value of a solution. A solution of a mixture of dyes can be obtained to measure pH values from zero to 14. It is called universal indicator. Some universal indicators can measure the pH change of even 0.5. In fact, dyes themselves are weak acids or bases. Colour change occurs as a result of change in the structure of dye due to acceptance or release of protons. Different forms of a dye have different colours and hence, colour change is observed when pH of the solution changes. A standard chart for the colour change of the universal indicator with pH is supplied with the indicator paper or solution and the comparison of observed colour change with the chart provides a good estimate of the pH of the solution.

Natural pH Indicators



Red cabbage juice has vast pH range. It is a universal indicator of pH in aqueous solution.

The colour of these hydrangeas depends on the pH of the soil in which they grow. If pH of soil is acidic, flowers are blue and in alkaline pH, flowers are pink.

MATERIAL REQUIRED:

- Beakers (100 mL) : Four
- Glass droppers : Four
- Test tubes : Four
- pH chart : One

- Fruit juice : Lemon, orange, apple, pineapple
- pH papers/universal indicator solution : As per need

PROCEDURE:

(i) Procure fresh juices of lemon, orange, apple and pineapple in separate beakers of 100 mL capacity each.

(ii) Transfer nearly 2 mL of the fresh juice (20 drops) with the help of a separate dropper for each juice in four different test tubes marked 1, 2, 3 and 4 respectively.

(iii) Add two drops of the universal indicator in each test tube and mix the content of each test tube thoroughly by shaking.

(iv) Match the colour appearing in each test tube with the standard pH chart.

(v) Record your observations in Table 5.1.

(vi) Repeat the experiment using pH papers to ascertain the pH of different juices and match the colour in each case with the one obtained with universal indicator.

(vii) Arrange the pH value of the four juices in increasing order.

Table 5.1 : pH value of different fruit juices

Name of the Juice	Colour with universal indicator	pH	Inference
Lemon			
Orange			
Apple			
Pineapple			

RESULT:

Increasing order of pH value of juices is _____.

PRECAUTIONS:

(a) Add equal number of drops of universal indicator to equal volumes of solutions in each of the test tubes.

(b) Match the colour of the solution with pH chart carefully.

(c) Store pH papers at a safe place to avoid contact with acidic and basic reagents kept in the laboratory.

(d) Use only fresh juice for the experiment.