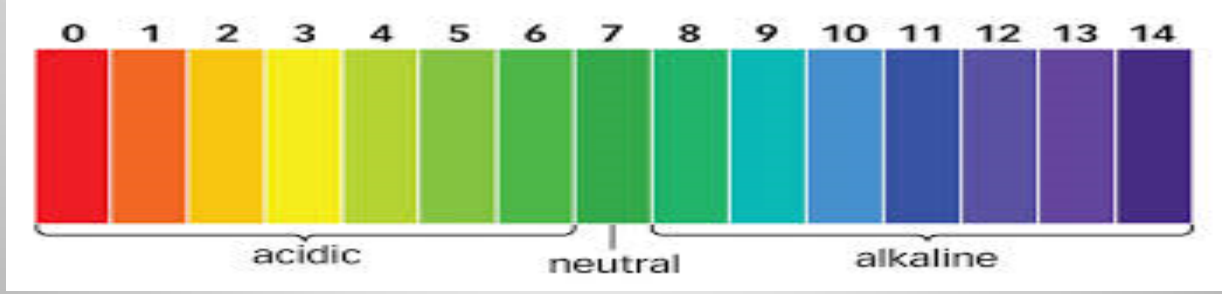
pH

- The formal definition of pH is the negative logarithm of the hydrogen ion activity.
- pH = -log[H+]

- pH is a unit of measure which describes the degree of acidity or alkalinity (basic) of a solution.
- It is measured on a scale of 0 to 14

pH value

- The pH value of a substance is directly related to the ratio of the hydrogen ion and hydroxyl ion concentrations.
- If the H+ concentration is higher than OH- the material is acidic.
- If the OH- concentration is higher than H+ the material is basic.
- 7 is neutral, **<** is acidic, **>**7 is basic



pH

- The addition of acid to water increases the concentration of hydrogen ions and reduces the concentration of hydroxyl ions

- The addition of a base would increase the concentration of hydroxyl ions and decrease the concentration of hydrogen ions

pH meter

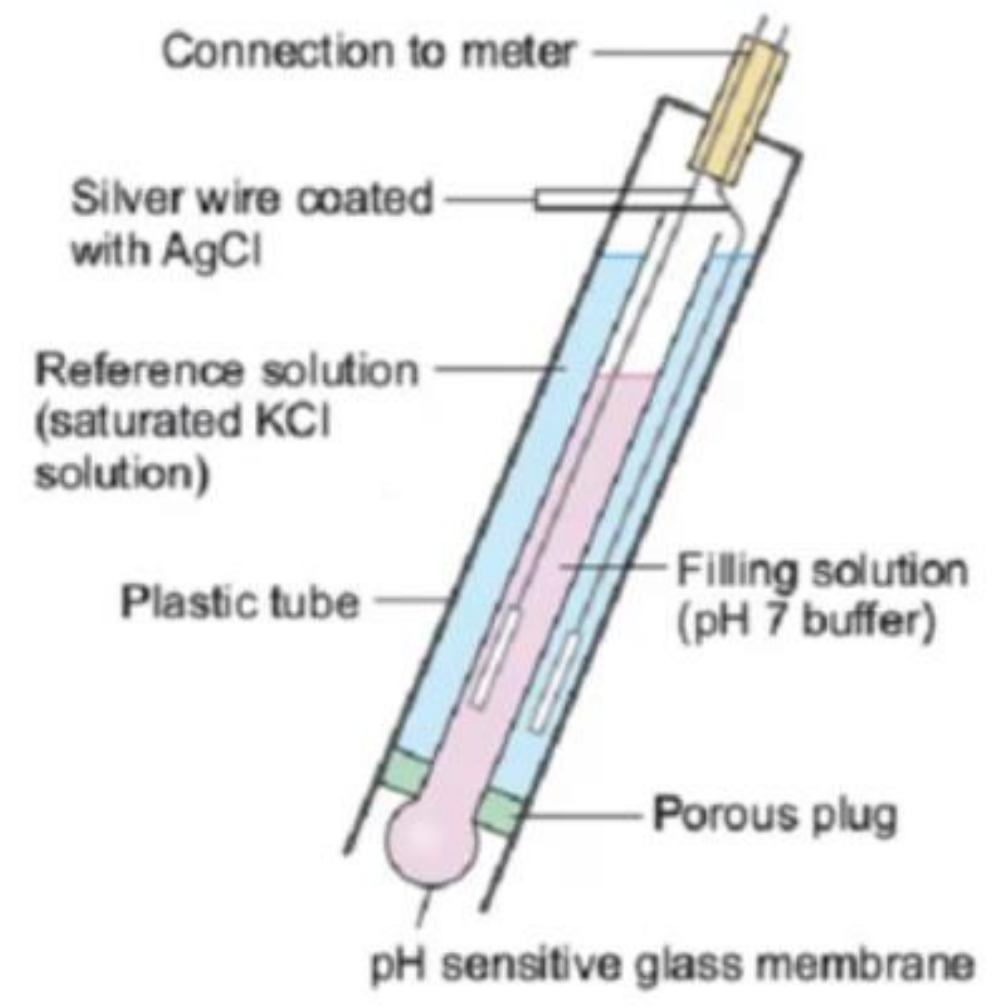
- A pH meter is an electronic device used for measuring the pH (acidity or alkalinity) of a liquid (though special probes are sometimes used to measure the pH of semi-solid substances).


Electrode
Holding
arm
METTLER TOLEDO
Combination
electrode
display
6.434
Solution
tested
Press button

pH Measurement

- A pH measurement system consists of a pH measuring electrode (pH-sensitive electrode), a reference electrode, or combination electrode.
- The pH measuring electrode is a hydrogen ion sensitive glass bulb.
- The reference electrode output does not vary with the activity of the hydrogen ion.

combination electrode



pH Meter

- A sample is placed in a cup and the glass probe at the end of the retractable arm is placed in it.
- The probe is connected to the main box.
- There are two electrodes inside the probe that measure voltage.
- One is contained in liquid with fixed pH.
- The other measures the acidity of the sample through the amount of H+ ions.

pH Meter

- A voltmeter in the probe measures the difference between the voltages of the two electrodes.

- The meter then translates the voltage difference into pH and displays it on the screen.