

Determination of pH of Water Sample

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Aim: To determine the pH of water sample.

Theory: The ionisation of water results in the formation of hydrogen ion (H^+) and hydroxyl ion (OH^-). Change in the concentration of one brings about the simultaneous changing in the concentration of the other thereby altering the condition of the water. So, a number scale, termed as pH scale, is used to determine the pH of a medium, i.e., the acidity or the alkalinity of the same.

Materials Required:

- i. Beaker – 100ml
- ii. pH meter
- iii. Buffer solution with a known pH
- iv. Tissue paper
- v. Distilled water
- vi. Sample of which the pH is to be measured.



Procedure:

- i. The pH meter is set on a flat surface.
- ii. The electrode of the pH meter is dipped in a buffer solution with a known pH to calibrate it.
- iii. After calibrating, the pH meter, the electrode is washed by dipping into distilled water to get rid of any adhered buffer.
- iv. The electrode is gently wiped with a tissue paper.
- v. The electrode is then dipped in the sample solution and its reading is noted.
- vi. The electrode is washed again by dipping in distilled water and the pH of the sample is measured two more times.

Observation:

Sample Solution	pH			Average pH
	1 dip	2 dip	3 dip	

Result: The pH of the given water sample was found to be _____, which indicates that the sample is acidic/alkaline/neutral in nature.

Precautions:

- i. The electrode bulb of the pH meter should always be clean, to avoid misleading of the result.
- ii. pH estimation is carried on spot immediately after collection of sample or the value changes.

Review Questions

1. What is pH?
2. Who discovered pH scale?
3. Why is pH taken as the negative logarithm of H^+ activity?
4. What is the principle of pH measurement?
5. Name the most acidic and most basic known substance.
6. Why can't we measure the pH of solid substances?
7. Explain the Lewis concept of acids and bases.
8. Explain the Arrhenius concept of acids and bases?
9. What is the use of measuring pH of:
 - a. Water sample, and
 - b. Soil sample?
10. What is the use of a buffer in pH meter?
11. What is the pH of the buffer used?
12. What is iso-potential point of a pH electrode?
13. What are the factors affecting pH of a solution?

