# pH

*Aim*

- explain the concept of pH

*Notes*

★ Definition - measure of hydronium ion concentration ($pH = -\log[H_3O^+]$)
★ Calculating pH

| $[H_3O^+]$ | $[OH^-]$ | pH |
|---|---|---|
| $10^{-1}$ M | $10^{-13}$ M | 1 |
| $10^{-2}$ M | $10^{-12}$ M | 2 |
| $10^{-3}$ M | $10^{-11}$ M | 3 |
| $10^{-4}$ M | $10^{-10}$ M | 4 |
| $10^{-5}$ M | $10^{-9}$ M | 5 |
| $10^{-6}$ M | $10^{-8}$ M | 6 |
| $10^{-7}$ M | $10^{-7}$ M | 7 |
| $10^{-8}$ M | $10^{-6}$ M | 8 |
| $10^{-9}$ M | $10^{-5}$ M | 9 |
| $10^{-10}$ M | $10^{-4}$ M | 10 |
| $10^{-11}$ M | $10^{-3}$ M | 11 |
| $10^{-12}$ M | $10^{-2}$ M | 12 |
| $10^{-13}$ M | $10^{-1}$ M | 13 |

**Answer the questions below by circling the number of the correct response**

1. What is the pH of a solution if $[OH^-] = 10^{-4}$ M? (1) 9 (2) 10 (3) 5 (4) 4
2. Which of the following solutions has the highest pH? (1) 1 M NaOH (2) 0.01 M NaOH (3) 1 M NaCl (4) 2 M HCl
3. The pH of pure water is (1) 0 (2) 5 (3) 7 (4) 11
4. A solution with a pH of 9 is (1) an acid, (2) a base, (3) neutral, (4) a salt.
5. An acid could have a pH of (1) 1, (2) 7, (3) 9, (4) 13