

The pH of neutral water at 25°C is 7.0. As the temperature increases, ionisation of water increases, however, the concentration of H⁺ ions and OH⁻ ions are equal. What will be the pH of pure water at 60°C?

- (i) Equal to 7.0
- (ii) Greater than 7.0
- (iii) Less than 7.0
- (iv) Equal to zero

At 25°C, [H⁺] = [OH⁻] = 10⁻⁷ and K_w = [H⁺] [OH⁻] = 10⁻¹⁴. On heating, K_w increases, i.e., [H⁺] [OH⁻] > 10⁻¹⁴. As [H⁺] = [OH⁻], [H⁺]² > 10⁻¹⁴ or [H⁺] > 10⁻⁷ M or pH < 7.