

Question

What is the effect of temperature on molarity and molality?

Answer

Molarity C is defined as the amount of solute n (in moles) divided by the volume of the solution V (in litres):

$$C = \frac{n}{V} \quad [\text{mol/L}]$$

Increase of temperature results in solution volume increase. The greater solution volume, the less solution molarity. So, **increase of temperature results in molarity decrease and, vice versa, decrease of temperature results in molarity increase.**

Molality b is defined as the amount of solute n (in moles), divided by the mass (in kg) of the solvent m (not the mass of the solution):

$$b = \frac{n}{m} \quad [\text{mol/kg}]$$

Since neither n nor m depends on temperature, **temperature has no effect on the molality.**