Answer on Question #75169, Chemistry / General Chemistry

What is the molality of a solution made from 1.56 moles of KCl and 1.22 kg of water at 200 oF?

A. 1.28 m
B. 1.28 M
C. 12.84 m
D. 12.84 M
E. All of the Above

Solution:

Right answer is - A. 1.28 m

Molality - the amount of dissolved substance (number of moles) per 1000 g of solvent.

We have a mathematical formula for determining this quantity:

$$m = \frac{\nu}{m_2}$$

where: m – molality, ν - amount of solute (mol number), m_2 - mass of solvent, kg.

We substitute in the formula the data given to us in the question:

$$m = \frac{1{,}56}{1{,}22} \approx 1{,}28(mol/kg)\ or\ 1{,}28\ m$$

Since molality, unlike the molar concentration, does not depend on temperature, the temperature value in the question condition can be neglected.