Summary

In this work, the solutions of potassium chloride, sodium chloride, magnesium chloride hexahydrate, calcium chloride hexahydrate and urea of molal concentration 0,1-1,0 mol/kg were prepared. Next, the specific density was measured and subsequently converted into actual density at 25°C.

Based on the density, the molarity of solutions (mol/l) was determinated and linear regression equations for the relationship between molality and molarity were expressed.

Furthermore, the osmolality (mosmol/kg) for chosen aqueous solutions of used electrolytes and urea was measured by osmometer.

The changes in volume of solution of investigated substances elicited by the dissolution of 1 g of the substance in 1 kg of pure water (so-called partial specific volume) were expressed.

Three different formulary methods were applied in order to determinate the values of the theoretical and actual osmolarity of the solutions. The regression equations for the determination of osmolarity from measured osmolality were expressed. In conclusion, the procedure according to USP 31 using partial specific volume was recommended for the estimation of osmolarity from the experimentally obtained osmolality.