Answer on Question 77076 in General Chemistry

.m ($CaCl_2$)=25.0 g

V(H_2O)=250 mL

K_b(H_2O)=0.512$^{\circ}C/m$

.t (boiling)=?

According to the ebullioscopy

Δt =$i \times C_m \times K_b$

$C_m = \dfrac{m\ (CaCl_2)}{M_r(CaCl_2) \times m(H_2O)}$

Find $M_r(CaCl_2)$ = A_r(Ca)+2A_r(Cl)=40+2×35.5=111

Considering the density of water ρ(H_2O) =1 g/mL

.m(H_2O)= V(H_2O)=250 g

$CaCl_2$ is a strong electrolyte which is completely dissociated according to equation

$CaCl_2$= Ca^{2+} +2Cl^- i=3

$C_m = \dfrac{25}{111 \times 0.25}$=0.9 mol/kg

Δt =3×0.9×0.512=1.38 ⁰C

.t b=t b(H_2O)+ Δt=100+1.38=101.38⁰ C