PROBLEMS OF PHYSICAL CHEMISTRY

2018-2019

LESSON 4

10. The vapour pressures at 7 ºC of pure A and B are 100 and 1000 mmHg respectively. For an ideal solution formed by A and B in equimolar quantities and 27 oC want to know:

   a) the vapour pressure of the solution
   b) vapour composition

   Data: $\Delta\overline{H}_{vap,A}$ =400 cal·mol^{-1}; $\Delta\overline{H}_{vap,B}$ =280 cal·mol^{-1}

   R = 0.082 l·atm·K^{-1}·mol^{-1} = 1.987 cal·K^{-1}·mol^{-1} = 8.314 J·K^{-1}·mol^{-1}

11. The following table show the values of solutions of acetone-chloroform at 32.5 ° C.

$x^{liq}_{(HCCl3)}$	$P_{(HCCl3)}$ / (mm Hg)	$P_{(C3H6O)}$ / (mmHg)
0.000	-	344.5
0.059	9.200	323.2
0.080	12.700	-
0.100	16.200	-
0.123	20.400	299.3
0.185	31.9	275.4

Calculate for a solution of $x^{L}_{HCCL_3} = 0.123$ at 32.5 ºC:

   a) The activity coefficients of acetone and chloroform according to convention I
   b) The activity coefficients of acetone and chloroform according to convention II, considering acetone the solvent