

Chemistry 236 -- Quiz 8

November 5, 2003 — Binary Liquid-Vapor Equilibrium

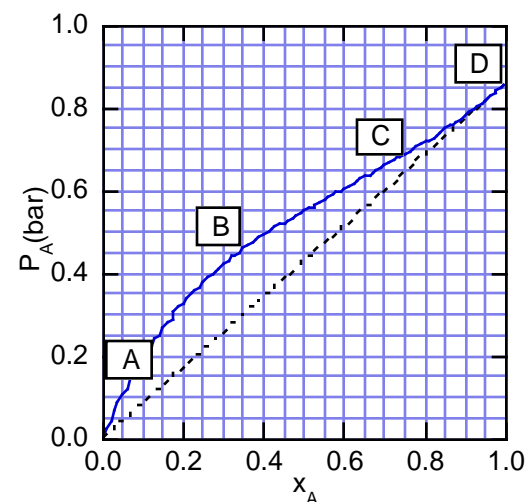
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1. (3) In an ideal solution of components A and B, the activity coefficient γ_A is
- 1.00 in the limit $x_A \rightarrow 1$.
 - 1.00 in the limit $x_A \rightarrow 0$.
 - 1.00 for all x_A .
 - dependent on the value of x_B .
 - none of these.

2. (3) The vapor pressure P_A of component A in a binary mixture is shown in the accompanying figure. In Convention I (the Raoult's Law convention), at $x_A = 0.40$ the activity coefficient γ_A is

- 0.49
- 0.57
- 0.69
- 1.44
- none of these



3. (6) Consider the following data for acetone-chloroform solutions at 35.2°C (A = acetone):

$x_{A,l}$	$x_{A,v}$	$P(\text{torr})$	$x_{A,l}$	$x_{A,v}$	$P(\text{torr})$
0.0000	0.0000	293	0.6034	0.6868	267
0.0821	0.0500	279.5	0.7090	0.8062	286
0.2003	0.1434	262	0.8147	0.8961	307
0.3365	0.3171	249	0.9397	0.9715	332
0.4188	0.4368	248	1.0000	1.0000	344.5
0.5061	0.5625	255			

For the solution having $x_{A,l} = 0.8147$, calculate P_A , P_B , $P_{A,id}$, $P_{B,id}$, γ_A , and γ_B (where "id" stands for ideal).