Unit 9 - Week 7: Liquid Mixtures and Fugacity

Assessment 7

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2020-03-18, 23:59 IST.

1) For an ideal solution, if reference state is Lewis Randall law, then reference state fugacity is? ***4 points***

- Pure component fugacity
- Activity
- Mole fraction
- None of the above

No, the answer is incorrect.
Score: 0
Accepted Answers:
Pure component fugacity

2) For an ideal solution, the ratio between the activity and the activity coefficient is equal to? ***4 points***

- Excess entropy
- Excess Gibbs energy
- Mole fraction
- None of the above

No, the answer is incorrect.
Score: 0
Accepted Answers:
Mole fraction

3) For an ideal solution, if the reference state is Henry's law, then reference state fugacity is? ***4 points***

- Pure component fugacity
- Activity
- Henry's law constant
- None of the above

No, the answer is incorrect.
Score: 0
Accepted Answers:
Henry's law constant

4) Consider a binary mixture of cyclohexane (1) and dodecane (1) at 39.33°C. If the system can be defined by two suffix Margules equation and if activity coefficients at infinite dilution is γ_1^∞=0.88 , then what is the value of two suffix Margules parameter, A (J/mol)? ***6 points***

- –240
- –332
- –428
- –149

No, the answer is incorrect.
Score: 0
Accepted Answers:
–332

5) Consider a binary mixture of cyclohexane (1) and dodecane (1) at 39.33°C. If the system can be defined by two suffix Margules equation and if activity coefficients at infinite dilution is γ_2^∞=0.86 , then what is the value of two suffix Margules parameter, A (J/mol)? ***6 points***

- –163
- –392
- –470
- –508

No, the answer is incorrect.
Score: 0
Accepted Answers:
–392

6) Consider an equimolar binary mixture of species "a" and "b". The activity coefficients at infinite dilution are given by: γ_a^∞=2.0 and γ_b^∞=1.5 . Calculate activity coefficient of species "a" and "b" using three suffix Margules equation. Corresponding activity coefficient equations are given below: $RT ln\gamma_a = (A + 3B)x_b^2 - 4Bx_b^3$ and $RT ln\gamma_b = (A - 3B)x_a^2 + 4Bx_a^3$. ***10 points***

- $\gamma_a = 2.41$ and $\gamma_b = 6.12$
- $\gamma_a = 0.11$ and $\gamma_b = 4.92$
- $\gamma_a = 3.41$ and $\gamma_b = 0.52$
- $\gamma_a = 1.11$ and $\gamma_b = 1.19$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$\gamma_a = 1.11$ and $\gamma_b = 1.19$

7) Consider an equimolar binary mixture of species "a" and "b". The activity coefficients at infinite dilution are given by: γ_a^∞=2.0 and γ_b^∞=1.5 . Calculate activity coefficient of species "a" and "b" using van Laar equation. Corresponding activity coefficient equations are given below: ***10 points***

$$RT \ln \gamma_a = \frac{A'}{\left(1+\frac{A' x_a}{B' x_b}\right)^2} \text{ and } RT \ln \gamma_b = \frac{B'}{\left(1+\frac{B' x_b}{A' x_a}\right)^2}$$

- $\gamma_a = 2.41$ and $\gamma_b = 6.12$
- $\gamma_a = 0.11$ and $\gamma_b = 4.92$
- $\gamma_a = 3.41$ and $\gamma_b = 0.52$
- $\gamma_a = 1.10$ and $\gamma_b = 1.18$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$\gamma_a = 1.10$ and $\gamma_b = 1.18$