## Week 6 Assignment 6

The due date for submitting this assignment has passed. Due on 2018-09-12, 23:59 IST.
As per our records you have not submitted this assignment.

1) Which among the following is not a direct contact separation process  
   - a) Distillation  
   - b) Membrane separation  
   - c) Absorption  
   - d) Adsorption  

   **No, the answer is incorrect.**  
   Score: 0  
   **Accepted Answers:**  
   a) Distillation

2) Extraction is used for the separation of  
   - a) Liquid – Liquid system  
   - b) Liquid – Vapor system  
   - c) Liquid – Solid system  
   - d) Gas – Solid system  

   **No, the answer is incorrect.**  
   Score: 0  
   **Accepted Answers:**  
   a) Liquid – Liquid system

3) Leaching is used for the separation of  
   - a) Liquid – Liquid system  
   - b) Liquid – Vapor system  
   - c) Liquid – Solid system  
   - d) Gas – Solid system  

   **No, the answer is incorrect.**  
   Score: 0
5) The relative volatility of A in a mixture with B is $\alpha_{AB} = 2.5$. The equilibrium vaporization ratio of B is $K_B = 0.7$. The value of $\alpha_{BA}$?

**Given:**
- $\alpha_{AB} = 2.5$
- $K_B = 0.7$

**To Find:**
- $\alpha_{BA}$

No, the answer is incorrect.
Score: 0

Accepted Answers:
- b) Liquid – Vapor system

1 point

6) The relative volatility of A in a mixture with B is $\alpha_{AB} = 2.5$. The mole fraction of B in the first droplet of liquid condensed from an equimolar saturated vapor mixture of A and B is about 1 point

**Given:**
- $\alpha_{AB} = 1.5$

Equimolar saturated vapor mixture i.e.,

$y_A = y_B = 0.5$

**To Find:**
- $x_B$

No, the answer is incorrect.
Score: 0

Accepted Answers:
- c) 0.71

7) Consider a mixture of 30 mole% A, 30% B and 40% C. The solution is approximately ideal. The following relative volatility values are known at 1 atm pressure: $\alpha_{AB} = 1.4, \alpha_{CB} = 1.2$. The value of $\alpha_{CA}$ is

**Given:**
- $\alpha_{AB} = 1.4$
- $\alpha_{CB} = 1.2$

**To Find:**
- $\alpha_{CA}$

1 point
A ternary solution of A (30 mole%), B (40 mole%) and C may be considered to be ideal. The equilibrium vaporization ratios are $K_1 = 2.25$, $K_2 = 1.02$ and $K_3 = 0.6$ at 1 atm total pressure. The solution is:

Given:

- $K_1 = 2.25$
- $K_2 = 1.02$
- $K_3 = 0.6$
- $x_1 = 0.3$
- $x_2 = 0.4$
- $x_3 = 0.3$

9) Water content of natural gas drops with increase in

- a) Temperature
- b) Pressure
- c) Amount of liquefied acid gases
- d) Molecular weight

No, the answer is incorrect.
Score: 0
Accepted Answers:
a) Temperature
d) Molecular weight

10) Which of the following analytical method is NOT used for water estimation in sour natural gas

- a) Zhu et al. method
- b) Maddox’s component contribution model
- c) Robinson’s $H_2S$ model
- d) Wang et al. method

No, the answer is incorrect.
Score: 0
11) 600 ppmv CO2 in air at 25°C and 1 atm is equivalent to
   a) 1121.0 mg/m³
   b) 599.7 mg/m³
   c) 500.0 mg/m³
   d) 899.7 mg/m³

   No, the answer is incorrect.
   Score: 0

   Accepted Answers:
   d) 899.7 mg/m³

12) Dehydration reduces:
   a) The chances of gas hydrate formation in natural gas.
   b) The corrosion in natural gas pipelines.
   c) The heating value of the natural gas.
   d) The cost of separation of water.

   No, the answer is incorrect.
   Score: 0

   Accepted Answers:
   a) The chances of gas hydrate formation in natural gas.
   b) The corrosion in natural gas pipelines.
   c) The heating value of the natural gas.

13) 12 m³ of oxygen is to be separated by adsorption using silica gel at 30 kPa and 90.1 k. The natural pressure of O₂ at 90.1 k is 100.4 kPa. The mass of silica gel required for this purpose is about (Hint: Isotherm using the parameters given in Table 1.)

   ![Table]

   a) 61.3 kg
   b) 109.5 kg
   c) 21.4 kg
   d) 156.0 kg
No, the answer is incorrect.
Score: 0
Accepted Answers:
a) 61.3 kg