Unit 7 - Week 5 Adsorption

Assignment 5

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

1. Which item is not a target process?
   - A) classification
   - B) concentration
   - C) adsorption
   - D) filtration
   
   **Accepted Answers:**
   - A) classification
   - B) concentration
   - C) adsorption
   - D) filtration

2. Pressure drop in a packed bed is in 2 box. What will be the pressure drop if the velocity is doubled?
   - A) 2 times
   - B) 4 times
   - C) 6 times
   - D) 8 times
   
   **Accepted Answers:**
   - A) 2 times

3. Pressure drop in a packed bed is in 2 box. What will be the pressure drop if the bed height is quadrupled?
   - A) 4 times
   - B) 8 times
   - C) 12 times
   - D) 16 times
   
   **Accepted Answers:**
   - A) 4 times

4. Find the first law of diffusion status, Flux =
   
   **Accepted Answers:**
   - \( \delta^{2}c / \delta x^{2} \)
   - \( \delta^{3}c / \delta y^{2} \)
   - \( \delta^{3}c / \delta z^{2} \)

5. What is the current status?
   - A) break through time > Elimination time
   - B) Break through time = Elimination time
   - C) Break through time < Elimination time
   - D) Break through time = 0.0 Elimination time
   
   **Accepted Answers:**
   - A) break through time > Elimination time
   - B) Break through time = Elimination time

6. If the breakthrough time is 5 hours and difference between break through and Elimination times is 2 hours, what is the fraction of bed load?
   - A) 0.2
   - B) 0.4
   - C) 0.6
   - D) 0.8
   
   **Accepted Answers:**
   - A) 0.2

7. Which is not observed?
   - A) long bed through time
   - B) round difference between break through and Elimination times
   - C) pressure break through time
   - D) long bed
   
   **Accepted Answers:**
   - A) long bed through time

8. A stream at a flow rate of 2 m/s containing 2 g/L of impurity is entering an adsorber. 20% of fresh activated carbon is added to remove the impurity. What is the percentage removed if the adsorption follows a linear relationship and constant = 0.9?

   **Accepted Answers:**
   - A) 0.70
   - B) 0.80
   - C) 0.90
   - D) 1.00

9. To prove it, instead of fresh carbon if we add used carbon containing 6 g/L of impurity, what is the percentage removed?

   **Accepted Answers:**
   - A) 0.50
   - B) 0.60
   - C) 0.75
   - D) 0.90

10. With a leakage, a countercurrent adsorption, level of 0.5 m is entering the first adsorber. It contains 0.5 g/L of impurity. 20% by weight of fresh carbon is added in the second stage and it then enters the first stage while the liquid from the first stage to the second. The adsorption follows a linear relationship with \( K = 0.7 \). What is the overall fraction adsorbed?

   **Accepted Answers:**
   - A) 0.40
   - B) 0.50
   - C) 0.60
   - D) 0.70