

Unit 7 - Week 5 Adsorption

Course outline

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Week 2

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Week 4 Solid liquid separation

Week 5 Adsorption

Adsorption

Adsorption

Adsorption

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Assignment 5

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

Due on 2019-09-04, 23:59 IST.

1) Which one is not a staged process

1 point

- distillation
- extraction
- absorption
- filtration

No, the answer is incorrect. Score: 0

Accepted Answers: *filtration*

2) Pressure drop in a packed bed is 2 bar. What will be the pressure drop if the velocity is doubled?

No, the answer is incorrect. Score: 0

Accepted Answers: *(Type: Range) 7.99,8.01*

1 point

3) Pressure drop in a packed bed is 5 bar. What will be the pressure drop if the bed length is quadrupled?

No, the answer is incorrect. Score: 0

Accepted Answers: *(Type: Range) 19.9,20.1*

1 point

4) Fick's first law of diffusion states, Flux =

1 point

- $D^2 dC^2 / dx^2$
- $D dC^2 / dx^2$
- $D dC / dx$
- dC^2 / dx^2

No, the answer is incorrect. Score: 0

Accepted Answers: *D dC / dx*

5) State which is true

1 point

- Break through time > Exhaustion time
- Break through time < Exhaustion time
- Break through time = Exhaustion time
- Break through time = 0.5 Exhaustion time

No, the answer is incorrect. Score: 0

Accepted Answers: *Break through time < Exhaustion time*

6) If the breakthrough time is 5 hours and difference between Break through and Exhaustion times is 2 hours, what is the fraction of bed loaded?

No, the answer is incorrect. Score: 0

Accepted Answers: *(Type: Range) 0.79,0.81*

1 point

7) Which is not desired?

1 point

- longer break through time
- small difference between Break through and Exhaustion times
- shorter break through time
- long bed

No, the answer is incorrect. Score: 0

Accepted Answers: *shorter break through time*

8) A stream at a flow rate of 2 l/min containing 0.2 g/cc of impurity is entering an adsorber. 20 cc of fresh activated carbon is added to remove the impurity. What is the percentage removal if the adsorption follows a linear relationship with constant = 20?

No, the answer is incorrect. Score: 0

Accepted Answers: *(Type: Range) 16.5,16.8*

1 point

9) In problem 8, instead of fresh carbon if we add used carbon containing 0.5 g/cc of impurity, what is the percentage removal?

No, the answer is incorrect. Score: 0

Accepted Answers: *(Type: Range) 14.4,14.7*

1 point

10) In a two-stage counter current adsorber, feed of 0.5 l/min is entering the first adsorber. It contains 0.1 g/cc of impurity. Fresh carbon of 50 g is added in the second stage and it then enters the first stage, while the liquid flows from the first stage to the second. The adsorption follows a linear isotherm, with $K=7.5$. What is the overall fraction adsorption?

No, the answer is incorrect. Score: 0

Accepted Answers: *(Type: Range) 0.555,0.574*

1 point