

Course outline

How does an NPTEL online course work?

Week 0

Week 1

Week 2

Week 3

- Lecture 11 : Material Balance of Multiple Units
- Lecture 12 : Material Balance of Multiple Units (Contd.)
- Lecture 13 : Material Balance of Multiple Units (Contd.)
- Lecture 14 : Material Balance of Multiple Units (Contd.)
- Lecture 15 : Material Balance of Multiple Units - Recycle
- Week 3 Lecture Material
- Quiz: Week 3 : Assignment 3
- Week 3 Feedback Form

Week 4

Week 5

Week 6

Week 7

Week 8

Week 9

Week 10

Week 11

Week 12

Download Videos

Detailed Assignment Solution

Live Interactive session

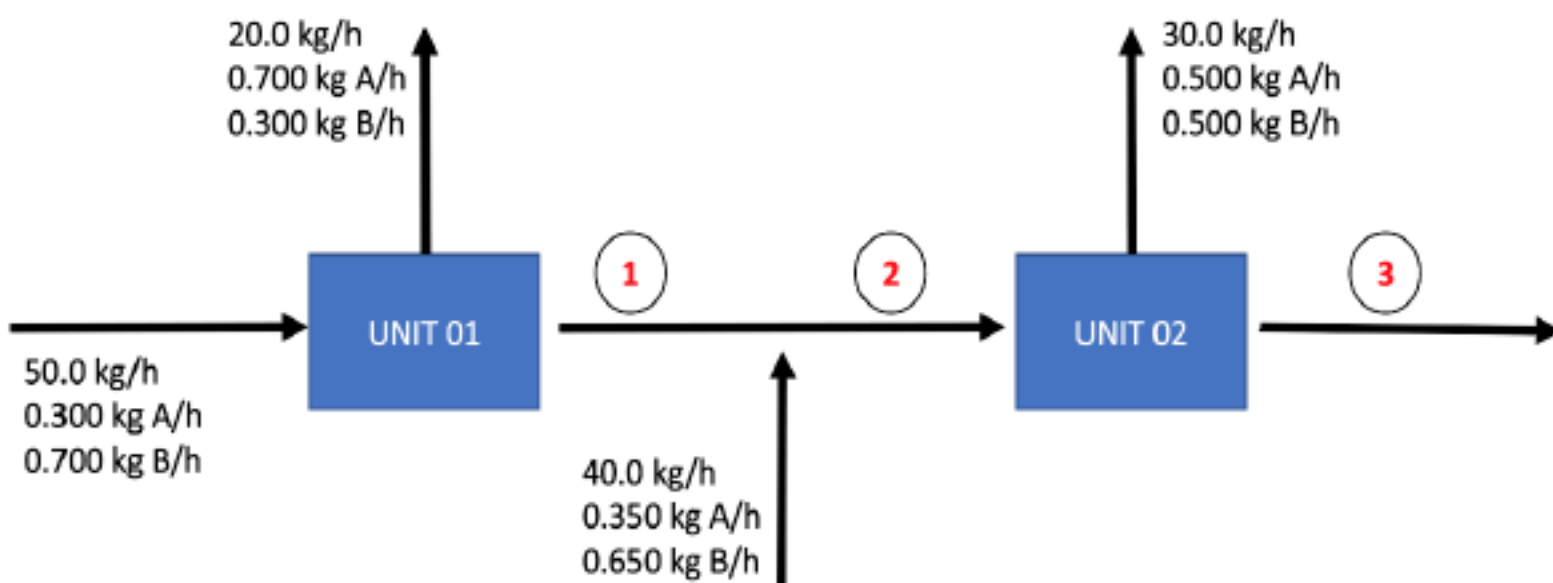
Week 3 : Assignment 3

The due date for submitting this assignment has passed.

Due on 2021-08-25, 23:59 IST.

As per our records you have not submitted this assignment.

Question 01, 02 & 03:



In order to calculate the flow rate and composition at stream lines 1, 2 and 3 marked in the above process flow chart:

1) Calculate Degree of Freedom for the overall process. 2 points

- (a) 0
- (b) 1
- (c) 2
- (d) 3

- a)
- b)
- c)
- d)

No, the answer is incorrect.

Score: 0

Accepted Answers:

a)

2) Calculate Degree of Freedom for UNIT 01. 2 points

- (a) 0
- (b) 1
- (c) 2
- (d) 3

- a)
- b)
- c)
- d)

No, the answer is incorrect.

Score: 0

Accepted Answers:

a)

3) Calculate Degree of Freedom at the mixing point between Unit 01 & Unit 02. 2 points

- (a) 0
- (b) 1
- (c) 2
- (d) 3

- a)
- b)
- c)
- d)

No, the answer is incorrect.

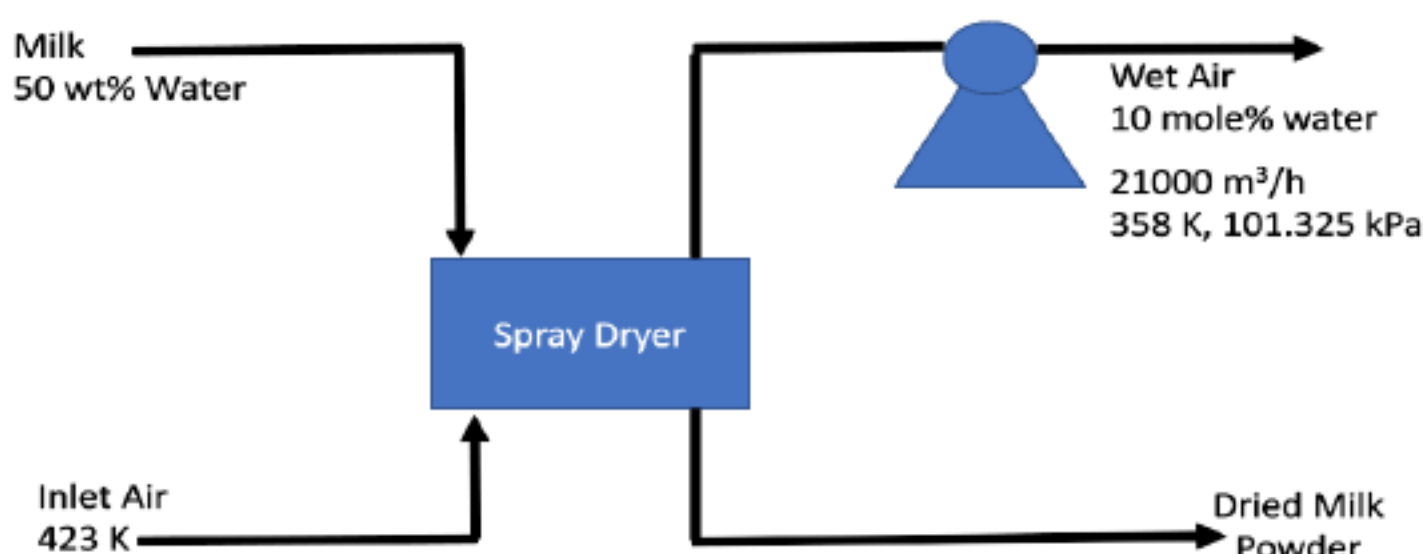
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Accepted Answers:

c)

Question 04 & 05:

Powdered milk is produced from raw milk by evaporating all the liquid water present in it using a spray dryer. Process flow chart is shown below and assume the inlet air is completely dry.



4) Calculate the molar flow rate of dry inlet air in kmol/h. 2 points

- (a) 705.27 kmol/h
- (b) 533.93 kmol/h
- (c) 643.41 kmol/h
- (d) 826.66 kmol/h

- a)
- b)
- c)
- d)

No, the answer is incorrect.

Score: 0

Accepted Answers:

c)

5) Calculate the production rate of powdered milk in kg/h. 2 points

- (a) 1286.82 kg/h
- (b) 2573.93 kg/h
- (c) 1586.66 kg/h
- (d) 1649.34 kg/h

- a)
- b)
- c)
- d)

No, the answer is incorrect.

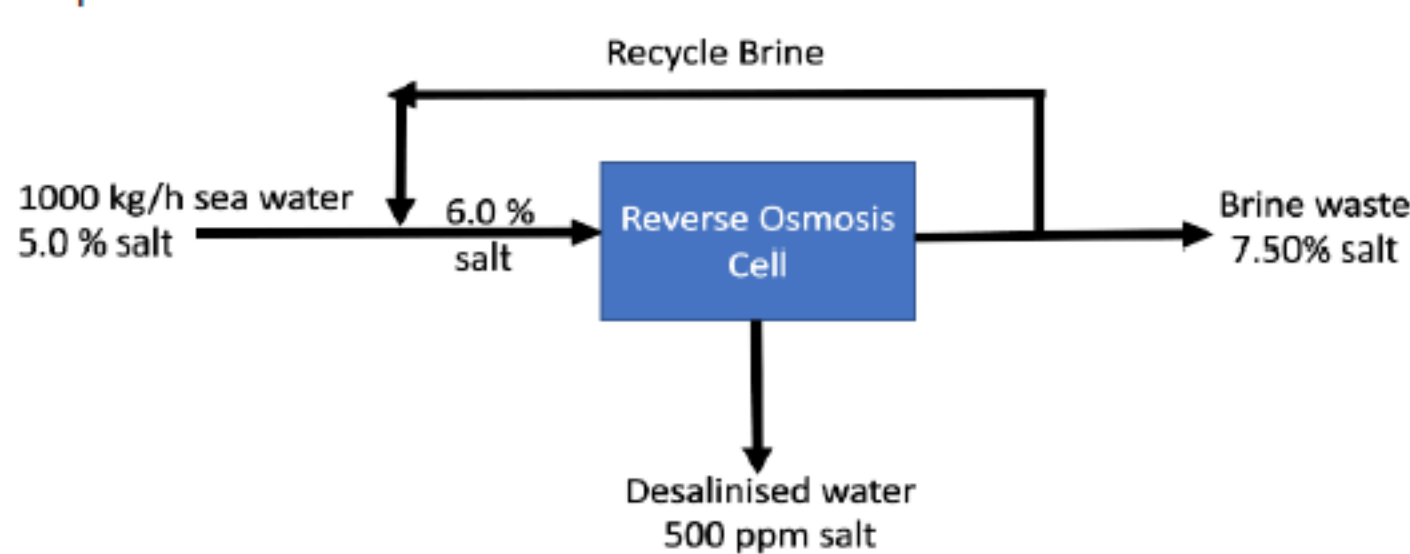
Score: 0

Accepted Answers:

a)

Question 06 & 07:

Given below is a process flow chart for removal of salt from sea water:



6) Calculate the rate of production of desalinated water in kg/h. 2 points

- (a) 340 kg/h
- (b) 660 kg/h
- (c) 666 kg/h
- (d) 551 kg/h

- a)
- b)
- c)
- d)

No, the answer is incorrect.

Score: 0

Accepted Answers:

a)

7) Calculate the recycle ratio of brine waste leaving the RO cell. 2 points

- (a) 0.50
- (b) 0.40
- (c) 0.70
- (d) 0.60

- a)
- b)
- c)
- d)

No, the answer is incorrect.

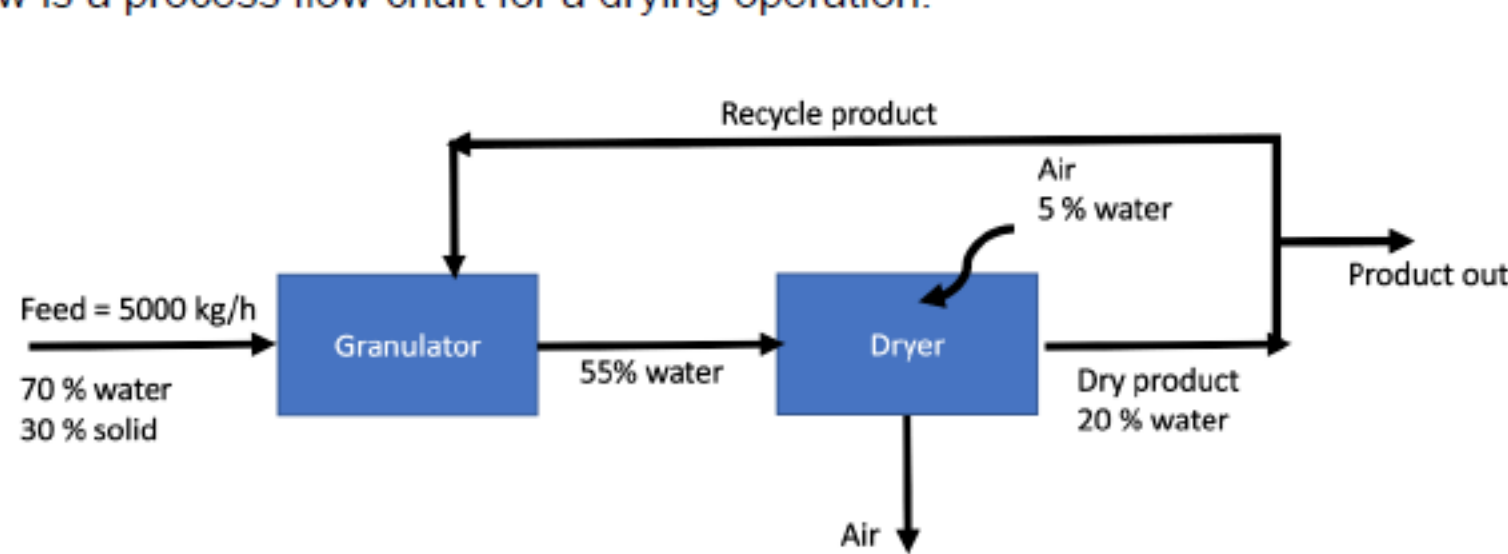
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Accepted Answers:

a)

Question 08, 09 & 10:

Given below is a process flow chart for a drying operation:



8) Calculate the feed rate of solids and water, respectively. 2 points

- (a) 1500 kg/h & 3500 kg/h
- (b) 2000 kg/h & 3000 kg/h
- (c) 2500 kg/h & 2500 kg/h
- (d) 3100 kg/h & 1900 kg/h

- a)
- b)
- c)
- d)

No, the answer is incorrect.

Score: 0

Accepted Answers:

a)

9) Calculate the recycle rate to the granulator. 2 points

- (a) 3125.57 kg/h
- (b) 7142.86 kg/h
- (c) 3928.57 kg/h
- (d) 2142.86 kg/h

- a)
- b)
- c)
- d)

No, the answer is incorrect.

Score: 0

Accepted Answers:

d)

10) Calculate the flow rate of dry air (without moisture) to the dryer. 2 points

- (a) 62500 kg/h
- (b) 59375 kg/h
- (c) 39285 kg/h
- (d) 35015 kg/h

- a)
- b)
- c)
- d)

No, the answer is incorrect.

Score: 0

Accepted Answers:

b)