

al\_C X Chemical Engineering Laboratory X +

orms.office.com/Pages/ResponsePage.aspx?id=ul1ABTw3IE6jDj5vz1B8\_hnkgsPOIrVOjW-8zTp1E9pUM0pKM

Process\_Dynamics\_... Sy laplace 5 d/(dx)(y)+... Sy ... آلة حاسبة لتحويل لاب ...

2- the letter (C) on fig.1 above refers to: \*

(1 Point)

Characteristics of column at wet packing

Flooding point

Characteristics of column at dry packing

Loading point

5

2- the letter (D) on fig.1 above refers to: \*

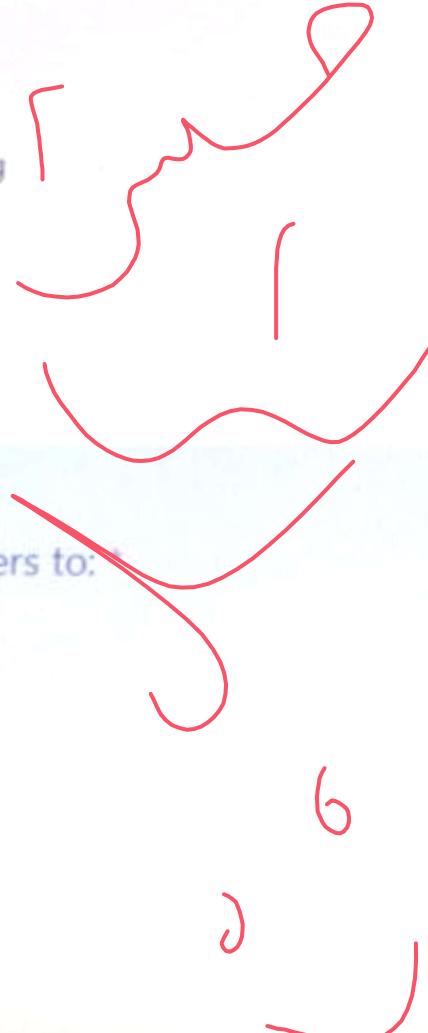
(1 Point)

Characteristics of column at wet packing

Flooding point

Characteristics of column at dry packing

Loading point



6

Operation of the absorption column should be always above the loading point \*  
(2 Points)

True

False

7

In tray drier experiment, dry air was blown to the duct at  $T = 50^\circ\text{C}$ , if you know that the drying

/ResponsePage.aspx?id=u1ABTw3IE6jDj5vz1B8\_hnkgsPOlrVOjW-8zTp1E9pUM0pKMDN

6

Phenolphthalein indicator's color was changed from pink to colorless sample obtained from gas absorption experiment of CO<sub>2</sub> after steady (2 Points)

- True
- False

7

Oil shale was used in the tray drier experiment \*  
(2 Points)

- True
- False

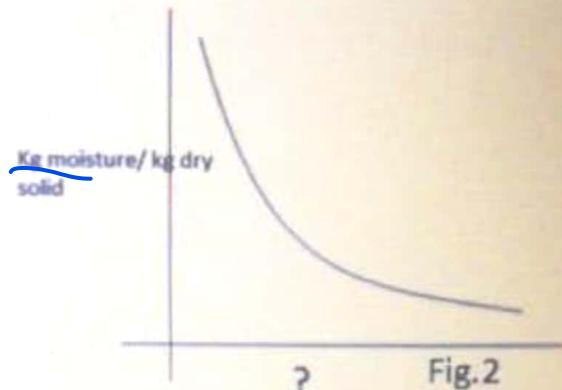
8

In Diffusion experiment, air was blown at the top of tube to : \*  
(2 Points)

- A. Increase turbulence

12

Finding the missing scale in Fig.2 next. \*  40  
(2 Points)



- A. Speed
- B. Water flowrate
- C. Temperature
- D. Time

13

In adsorption of dye by activated carbon experiment, the mass of carbon is fixed to 0.2 g and

## ○ Loading point

6

ppm means particles per million \*   
(1 Point)

6

Operation of the absorption column should be always above the loading point \*  
(2 Points)

- True
- False

13

In the tray drier experiment rate of mass transfer in the rate constant period is lower than the rate of transfer in the falling rate period \*

(2 Points)

9

As the concentration of the dye increases the transmittance reading from the spectrophotometer Decreases \*

(2 Points)



True



False

10

In cooling tower experiment, if the area under the curve that you have plotted in your report was 3.3752 and the height of the tower was 1.27 m, then the height of transfer units (HTU) (m)

AA

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 False

21

In try drier experiment, drying rate was investigated at \*  
(2 Points)

- A. Constant air flow rate
- B. variable air flow rate
- C. A+B
- D. None of them

22

Operation of the absorption column should be always above the loading point \*  
(2 Points)

False

10

In cooling tower experiment, if the area under the curve that you have plotted in your report was 3.3752 and the height of the tower was 1.27 m, then the height of transfer units (HTU) (m) is: \*



(3 Points)

1.3204

4.2865

2.6576

0.3760

$$\begin{aligned} Z &= H \uparrow \\ H &= Z \swarrow \\ &= 1.27 / 3.3752 \end{aligned}$$

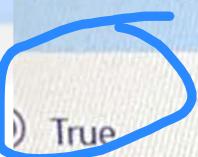
11

The velocity of discharged air through the duct in tray drier was measured by \*

10

The variable in cooling tower experiment was the **flow rate of air** \*

(2 Points)



True

False

11

**Operation of the absorption column should be always above the loading point** \*

(2 Points)

True

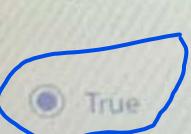
False



12

As the concentration of the dye increases the transmittance reading from the spectrophotometer Decreases \*

(2 Points)



True

False

0.3762

11

The velocity of discharged air through the duct in tray drier was measured by \*   
(2 Points)

- A. Psychrometer
- B. Pycnometer
- C. Spectrophotometer
- D. Digital anemometer



12

AA

forms.office.com

 True False

13

Loading point is the point at which liquid can't leave the bottom of absorption column

\*

(2 Points)

 True False

14

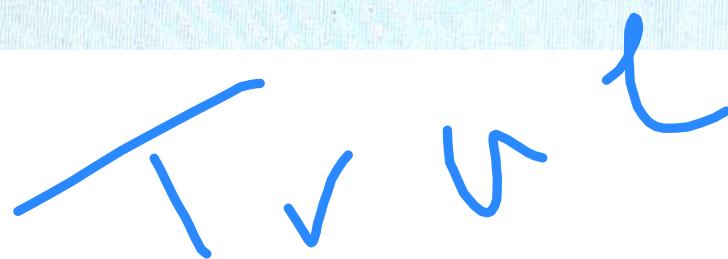
The velocity of discharged air through the duct in tray drier was measured by \*

(2 Points)

 A. Psychrometer

16

Increasing the flowrate of air in cooling tower decreases the number of transfer units \*  (2 Points)



The velocity of discharged air through the duct in tray drier was measured by \*  
(2 Points)

- A. Psychrometer
- B. Pycnometer
- C. Spectrophotometer
- D. Digital anemometer

18

In try drier experiment, drying rate was investigated at \*  
(2 Points)

- A. Constant air flow rate
- B. variable air flow rate
- C. A+B
- D. None of them

$$\alpha \left( \frac{v_s}{L} \right)^{\alpha}$$

raw Hill.

"Engineering", vol. 1, Pergamon press.

$\uparrow$  flow rate  $\uparrow$   $N_{OG}$   $\downarrow$   $H_{OG}$   
of Air

$\uparrow$   $k_{yq}$   $\downarrow$   $H_y$   $\uparrow$   $H$

20

Increasing the flowrate of air in cooling tower decreases the number of transfer units \*  
(2 Points)

True

False

21

Loading point is the point at which liquid can't leave the bottom of absorption column \*  
(2 Points)

AA

forms.office.com



Loading point

6

In Diffusion experiment, air was blown at the top of tube to : \*

(2 Points)

A. Increase turbulence.

B. Reduce temperature of acetone.

C. Enhance evaporation of acetone at tube.

D. All of them.

7

Finding the missing scale in Fig.2 next. \*

(2 Points)



(2 Points)

- True
- False

17

The variable in cooling tower experiment was the flow rate of air \*



(2 Points)

- True
- False



18

Finding the missing scale in Fig.2 next. \*

AA

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true



False

10

In cooling tower experiment, if the area under the curve that you have plotted in your report was 3.3752 and the height of the tower was 1.27 m, then the height of transfer units (HTU) (m) is: \*

(3 Points)

1.3204

4.2865

2.6576



0.3762

11

As the concentration of the dye increases



6

Operation of the absorption column should be always above the loading point \*  
(2 Points)

True

False

AA

forms.office.com



8

In adsorption of dye by activated carbon experiment, the mass of carbon is fixed to 0.2 g and the volume of solution is 500 ml each. If the initial concentration of the dye is 50 ppm and the final concentration is 2 ppm, then the amount of dye adsorbed per gram of carbon is: \*

(3 Points)

 50mg/g

$$\left( \frac{50 - 2}{0.2} \right) \times \frac{500}{1000}$$

 5mg/g 125mg/g 120mg/g

9

~~Oil shale was used in the tray drier experiment \*~~



- 120mg/g

22

Transmittance is measured using percentage unit \*   
(2 Points)

- True

- False

Submit

22

In tray drier experiment, dry air was blown to the duct at  $T = 50\text{ C}$ , if you know that the drying rate was  $0.06\text{ (g/m}^2.\text{min)}$ , calculate the heat transfer coefficient  $h\text{ (J/m}^2.\text{K.min)}$ , knowing that the Latent heat of vaporization of water (at  $T = 100\text{ C}$ ) is  $2.2564\text{ kJ/g.}^*$   $\square$   
(3 Points)



False

13

In tray drier experiment, dry air was blowing rate was  $0.06 \text{ (g/m}^2\text{.min)}$ , calculate the heat of the Latent heat of vaporization of water (a) (3 Points)

2.71

1.33

7.21

3.13

14

In tray drier experiment, drying rate was investigated (2 Points)

• A. Constant air flow rate

B. Gravitational flow rate

8

In the tray drier experiment rate of mass transfer in the rate constant period is lower than the rate of transfer in the falling rate period \*

(2 Points)

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 False

13

In tray drier experiment, dry air was blown to the duct at  $T = 50\text{ C}$ , if you rate was  $0.06\text{ (g/m}^2\text{.min)}$ , calculate the heat transfer coefficient  $h\text{ (J/m}^2\text{.K)}$  the Latent heat of vaporization of water (at  $T = 100\text{ C}$ ) is  $2.2564\text{ kJ/g}$ . \*  
(3 Points)

 2.71 1.33 7.21 3.13

14

In try drier experiment, drying rate was investigated at \*  
(2 Points)

- A. Constant air flow rate
- B. variable air flow rate
- C. A+B
- D. None of them

11

The velocity of discharged air through the duct in tray drier was measured by \*  
(2 Points)

- A. Psychrometer
- B. Pycnometer
- C. Spectrophotometer
- D. Digital anemometer

12

As the concentration of the dye increases the transmittance reading from the spectrophotometer Decreases \*

13

In adsorption of dye by activated carbon experiment, the mass of carbon is fixed to 0.2 g and the volume of solution is 500 ml each. If the initial concentration of the dye is 50 ppm and the final concentration is 2 ppm, then the amount of dye adsorbed per gram of carbon is: \* □

(3 Points)

- 50mg/g
- 5mg/g
- 125mg/g
- 120mg/g

14

In tray drier experiment, drying rate was investigated at \* ~~✗~~

(2 Points)

● D. Digital anemometer

18

In adsorption of dye by activated carbon ex  
the volume of solution is 500 ml each. If the  
final concentration is 2 ppm, then the amou  
(3 Points)

50mg/g

5mg/g

125mg/g

120mg/g

19

In cooling tower experiment, if the area under  
was 3.3752 and the height of the tower was 1.  
is: \*  
(3 Points)

1.3204

4.2865

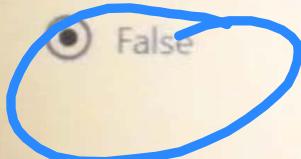
7

In the tray drier experiment rate of mass transfer in the rate constant period is lower than the rate of transfer in the falling rate period \*

(2 Points)

True

False



8

The velocity of discharged air through the duct in tray drier was measured by \*

(2 Points)

A. Psychrometer

B. Pycnometer

C. Psychrometer

6

Operation of the absorption column should be always above the loading point \*  
(2 Points)

- True
- False

rate of transfer in the falling rate period \* 

(2 Points)

True

False

|



9

As the concentration of the dye increases the transmittance reading from the spectrophotometer Decreases \*

(2 Points)

True

False

2. The point that terminating the constant drying rate period is called-----(1 marks) \*

Enter your answer

50mg/g

5mg/g

125mg/g

120mg/g

19

In cooling tower experiment, if the area under the curve that you have calculated was 3.3752 and the height of the tower was 1.27 m, then the height of the tower is: \* 

(3 Points)

1.3204

4.2865

2.6576

0.3762

20

Loading point is the point at which liquid can't leave the bottom of absorption tower. \* 

True

AA

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False

21

In try drier experiment, drying rate was

investigated at \*

(2 Points)



A. Constant air flow rate



B. variable air flow rate



C. A+B



D. None of them

22

Operation of the absorption column should be always above the loading point \*

(2 Points)



3. The concentration of dye in the adsorption experiment was measured using----- (2 marks)

visible spectrophotometer and the calibration curve

4. In the absorption column, pressure drop when the column is dry is higher than the pressure drop when the column is wet. (1 mark) \*

True

False

5. In diffusion Experiment, the process was performed at room temperature. (1 mark) \*

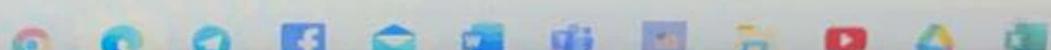
True

False

6. Number of cycles in Soxhlet experiment will decrease the removal of oil. (1 mark) \*

True

False



11. The name of experiment which You have used aqueous NaOH and ethanolic NaOH in titration  
-----(2 marks) \*

liquid-liquid extraction

12. In diffusion Experiment, the process was performed at room temperature.(1 mark) \*

True

False

13. Sand was used in the tray drier experiment.(1 mark) \*

True

False

Submit

7. The name of experiment which You have used aqueous NaOH and ethanolic NaOH in titrations is  
----- (2 marks) \*

liquid liquid extraction

8. The equation that relates the amount of adsorbate on the adsorbent to concentration at constant temperature is called (1 mark) \*

Enter your answer:

Frendlich

2. The point that terminating the constant drying rate period is called-----(1 marks) \*

Unbounded point

3. In diffusion Experiment, the process was performed at room temperature.(1 mark) \*

True

False



7. The name of experiment which You have used aqueous NaOH and ethanolic NaOH in titrations is----- (2 marks) \*

liquid-liquid extraction

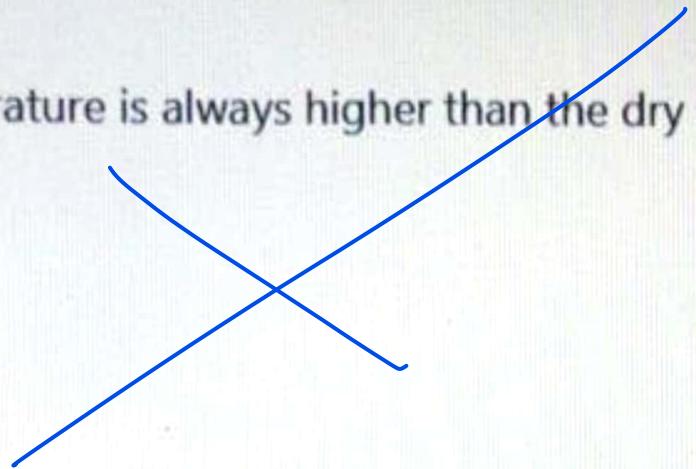
8. In the absorption column, pressure drop when the column is dry is higher than the pressure drop when the column is wet. (1 mark) \*

True

False

7. Wet bulb temperature is always higher than the dry bulb temperature.(1 mark) \*

- True
- False



8. The equation that relates the amount of adsorbate on the adsorbent to concentration at constant temperature is called .....(1 mark) \*

Freundlich adsorption isotherm

9. Number of cycles in Soxhlet experiment will decrease the removal of oil.(1 mark) \*

- True
- False



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- True
- False

10. The equation that relates the amount of adsorbate on the adsorbent at a given temperature is called ..... (1 mark) \*

### Freundlich isotherm

11. The length of gas column above acetone in the diffusion exper  
--(2 marks) \*

Enter your answer

12. Sand was used in the tray drier experiment.(1 mark) \*

False

6. Number of cycles in Soxhlet experiment will decrease the removal of oil.(1 mark) \*

True

False

7. The name of experiment which You have used aqueous NaOH and ethanolic NaOH in t  
-----(2 marks) \*

liquid liquid extraction

8. The solvent which was used in extracting oil from olives cake was----(1 mark) \*

hexane

9. Transmittance is measured using specific gravity unit.(1 mark) \*

True

False

11. The length of gas column above acetone in the diffusion experiment was    m  
--(2 marks) \*

vernier caliber

12. Sand was used in the tray drier experiment.(1 mark) \*

True

False

13. Wet bulb temperature is always higher than the dry bulb temperature.(1 mark) \*

True

False

**Submit**

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5. The name of experiment which You have used aqueous extraction (2 marks) \*

liquid liquid extraction

6. Transmittance is measured using specific gravity unit. (1 mark) \*

True

False

7. In the absorption column, pressure drop when the column is wet. (1 mark) \*

True

False

8. Number of cycles in 5 batch experiment will increase the

AA

forms.office.com



11. The length of gas column above acetone in the diffusion experiment was measured using----(2 marks) \*

Enter your answer

12. Transmittance is measured using specific gravity unit.(1 mark) \*

True

False

13. The solvent which was used in extracting oil from olives cake was----(1 mark) \*

hexan



AA

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10. Wet bulb temperature is always higher than the dry bulb temperature.(1 mark) \*

 True False

11. The length of gas column above acetone in the diffusion experiment was measured using-----(2 marks) \*

Enter your answer

12. Transmittance is measured using specific gravity unit.(1 mark) \*

 True False

10

Operation of the absorption column should be always above the liquid level (2 Points)

True

False

11

Phenolphthalein indicator's color was changed from pink to colorless when the sample obtained from gas absorption experiment of  $CO_2$  after steady state reached (2 Points)

True

False

12

The velocity of discharged air through the duct in tray drier was measured by                    (2 Points)

9. In diffusion Experiment, the process was performed at room temperature.(1 mark) \*

True

False

10. Number of cycles in Soxhlet experiment will decrease the removal of oil.(1 mark) \*

True

False



11. Wet bulb temperature is always higher than the dry bulb temperature.(1 mark) \*

True

False

6. Transmittance is measured using specific gravity unit.(1 mark) \*

True

False

7. The name of experiment which You have used aqueous NaOH and ethanolic  
-----(2 marks) \*

- 1.3204
- 4.2865
- 2.6576
- 0.3762

12

Oil shale was used in the tray drier experiment \*   
(2 Points)

- True
- False

13

Loading point is the point at which liquid can't leave the bottom of abs  
(2 Points)

- True

11. The name of experiment which You have used a quec  
----- (2 marks) \*

liquid liquid extraction

12. The concentration of dye in the adsorption experi

spectrophotometer

I

13. The equation that relates the amount of adsorbate on the  
temperature is called ..... (1 mark) \*

Freundlich

Submit

21

In adsorption of dye by activated carbon experiment, the mass of carbon is fixed to 0.2 g and the volume of solution is 500 ml each. If the initial concentration of the dye is 50 ppm and the final concentration is 2 ppm, then the amount of dye adsorbed per gram of carbon is: \*  
(3 Points)

- 50mg/g
- 5mg/g
- 125mg/g
- 120mg/g

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Pharmacology & P...

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Health benefits of t...

Google

False

7. In diffusion Experiment, the process was performed at room te

True

False

8. In the absorption column, pressure drop when the column is dry when the column is wet. (1 mark) \*

True

False

9. Number of cycles in Soxhlet experiment will decrease the removal

True

False

com/Pages/ResponsePage.aspx?id=ul1ABTw3IE6jDj5vz1B8\_hnkgsPOIrVOjW-8zTp1

Pharmacology & P...

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Google

False

7. In diffusion Experiment, the process was performed at room te

True

False

8. In the absorption column, pressure drop when the column is dry when the column is wet. (1 mark) \*

True

False

9. Number of cycles in Soxhlet experiment will decrease the removal

True

False

com/Pages/ResponsePage.aspx?id=ul1ABTw3IE6jDj5vz1B8\_hnkgsPOIrVOjW-8zTp1

Pharmacology & P...

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Google

False

7. In diffusion Experiment, the process was performed at room te

True

False

8. In the absorption column, pressure drop when the column is dry  
when the column is wet. (1 mark) \*

True

False

9. Number of cycles in Soxhlet experiment will decrease the removal

True

False

on the adsorbent to concentration at constant .4

\* temperature is called .....(1 mark)

frenlich

Experiment was measured using----- (2 marks) .5

visible spectrophotometer

Diffusion experiment was measured using--- .6

---(2 marks)

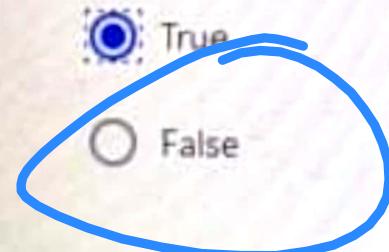
vernier caliper

17

The cooling tower in your experiment was packed with Rashig Rings material.  
(2 Points)

True

False



18

Schmidt number is the ratio of momentum diffusivity(viscosity) and mass diffusivity  
(2 Points)

True

False

19



10. Sand was used in the tray drier experiment.(1 mark) \*

True

False

11. The name of experiment which You have used aqueous NaO

-----(2 marks)

liquid liquid extraction

12.

The concentration of dye in the adsorption experiment wa

Enter your answer

13. The equation that related the amount of adsorbate on the solid to the concentration of solute

1 mark

17

The cooling tower in your experiment was packed with Rashig Rings material.  
(2 Points)

True

False



18

Schmidt number is the ratio of momentum diffusivity(viscosity) and mass diffusivity  
(2 Points)

True

False

19

Loading point

6

In Diffusion experiment, air was blown at the top of tube to :\*  
(2 Points)

- A. Increase turbulence.
- B. Reduce temperature of acetone.
- C. Enhance evaporation of acetone at tube.
- D. All of them.

### Question (1) (4 mark)

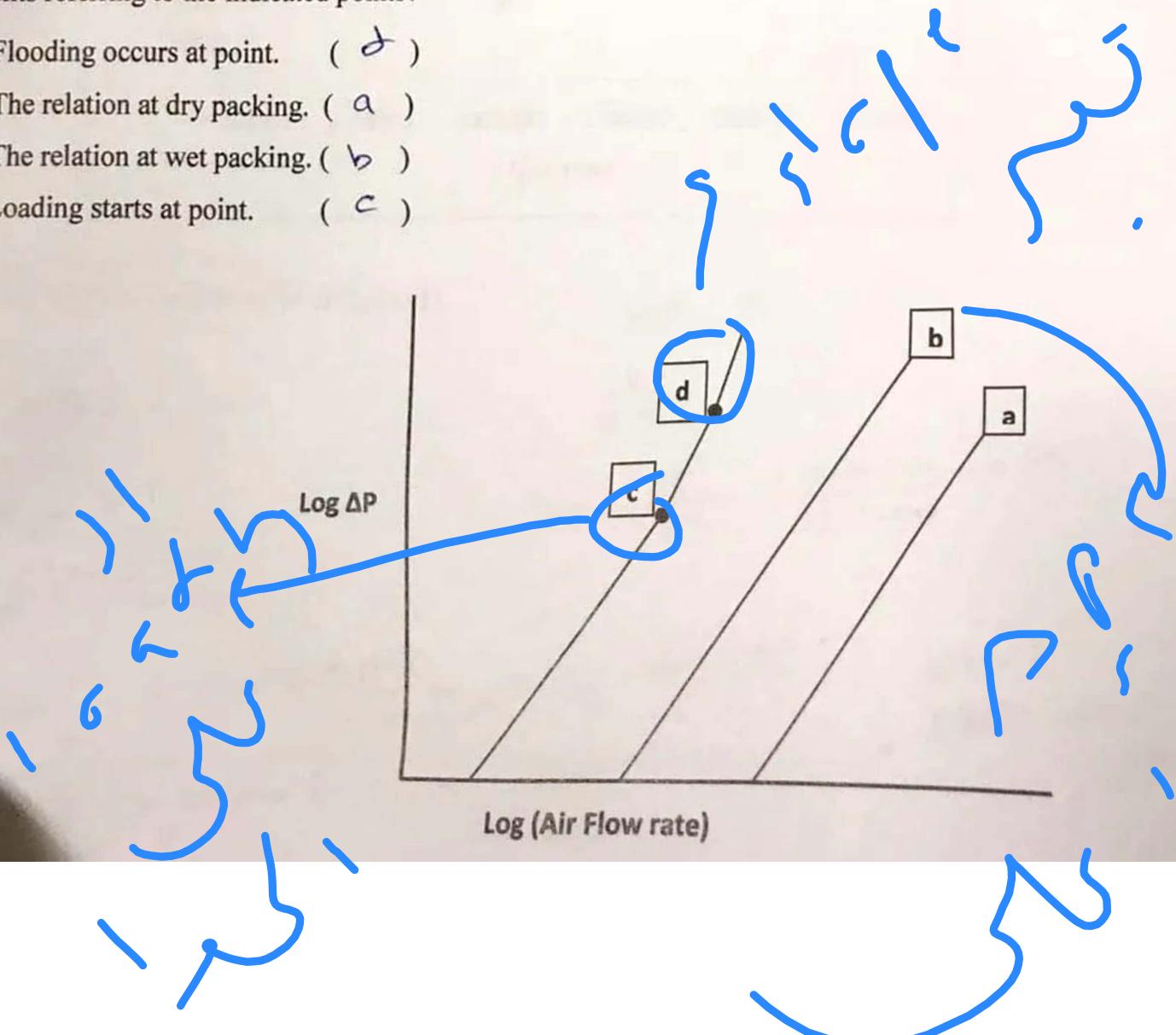
Answer By True or False:

1. In the tray drier experiment rate of mass transfer in the rate constant period is higher than the rate of transfer in the falling rate period. (True)
2. Wet bulb temperature is always higher than the dry bulb temperature. (False)
3. Increasing the flowrate of air in cooling tower decreases the number of transfer units. (False)
4. Humidity of inlet air to cooling tower has a big effect on the cooling water process. (True)

### Question (2) (4 mark)

Graph below shows the relation between pressure drop and gas flow rate inside a packed column in Gas absorption experiment, the points a, b, c and d were indicated in the graph. What is each of the following statements referring to the indicated points?

- 1- Flooding occurs at point. (d)
- 2- The relation at dry packing. (a)
- 3- The relation at wet packing. (b)
- 4- Loading starts at point. (c)



- 125mg/g
- 120mg/g

20

As the concentration of the dye increases the transmittance reading from the spectrophotometer Decreases \*  
(2 Points)

- True
- False

21

Increasing the flowrate of air in cooling tower decreases the number of transfer units \*  
(2 Points)

- True
- False

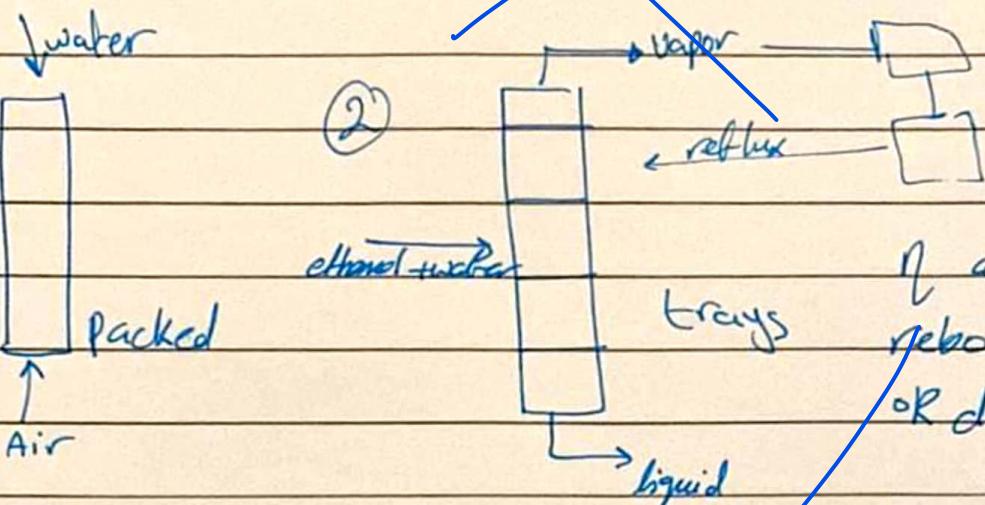
1- Gas absorption

2- distillation column

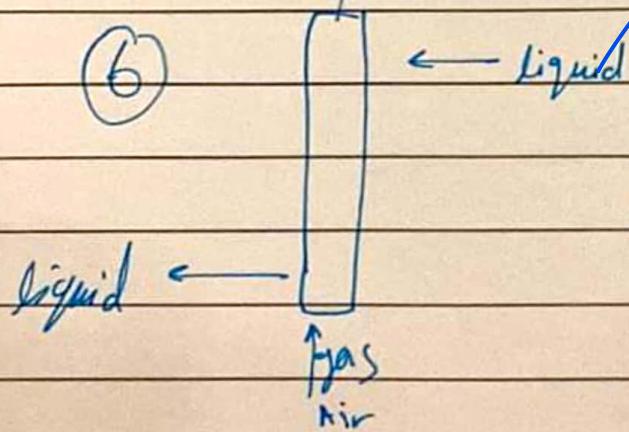
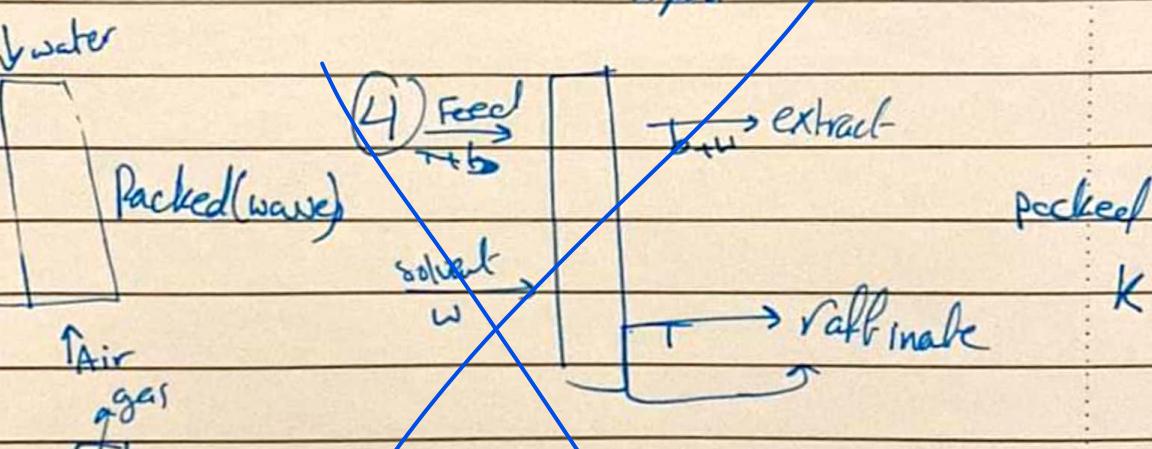
3- water cooling tower

4- liquid liquid extraction

6- wetted wall



$\eta$  at different  
reboiler power  
or different  $R$



determine power law  
relationship between  
liquid film mass transfer  
coefficient and mass flow  
rate of water.



True

False

5. The solvent which was used in extracting oil from olives cak

Hexane

6. Transmittance is measured using specific gravity unit.(1 mark)

True

False

7. In diffusion Experiment, the process was performed at room tem

True

False

2- the letter (C) on fig.1 above refers to: \*

(1 Point)

- Characteristics of column at wet packing
- Flooding point
- Characteristics of column at dry packing
- Loading point

5

2- the letter (D) on fig.1 above refers to: \*

(1 Point)

- Characteristics of column at wet packing
- Flooding point
- Characteristics of column at dry packing
- Loading point



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G Google



Me

True

False

14

As the concentration of the dye increases the transmittance reading from the spectrophotometer Decreases \*   
(2 Points)

True

False

15

The variable in cooling tower experiment was the flow rate of air \*  
(2 Points)

True

False

8

Flooding point is the point at which liquid can't leave the bottom of absorption column \*  
(2 Points)

True

False

9

Transmittance is measured using ppm unit \*  
(2 Points)

8. The solvent which was used in extracting oil from olives cake was----(1 mark) \*

hexane

9. In diffusion Experiment, the process was performed at room temperature (1 mark) \*

True

False

10. The concentration of dye in the adsorption experiment was measured using----(2 marks) \*

Enter your answer

Fig.1 shown here refers to data collected from gas absorption experiment \*  
(1 Point)

1- the letter (A) on fig.1 refers to:

- Characteristics of column at wet packing
- Flooding point
- Characteristics of column at dry packing
- Loading point

3

2- the letter (B) on fig.1 above refers to: \*  
(1 Point)

- Characteristics of column at wet packing
- Flooding point
- Characteristics of column at dry packing
- Loading point

Q2) Choose the correct answer:

A.  $\eta_{hot} = \frac{\Delta T_{cold}}{\Delta T_{max}}$

B.  $\eta_{hot} = \frac{\Delta T_{hot}}{\Delta T_{max}}$

C.  $\eta_{hot} = \frac{\Delta T_{max}}{\Delta T_{hot}}$

D.  $\eta_{hot} = \frac{1}{2} \frac{\Delta T_{hot} - \Delta T_{cold}}{\Delta T_{max}}$

ZAIN JO 26.5K/s

6:31

← 4\_5908...1344



The University of Jordan  
Faculty of Engineering and Technology

Chemical Engineering Department  
Chemical Engineering Laboratory (I)

Summer Semester : Quiz 1

Student name:

Student number:

A sieve analysis on a sample of initial total mass 350g gave the following results: (10 marks)

Sieve Size(mm)	0.063	0.09	0.15	0.35	0.5	0.85	1.2	2
Mass retained (g)	11	16	28	28	49	40	70	108

Plot the size distribution curve / cumulative basis ( You make the graph) , then find  $d_{50}$  value from your graph .



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