

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

6

Phenolphthalein indicator's color was changed from pink to colorless sample obtained from gas absorption experiment of CO₂ after steady (2 Points)

☐ True☒ False

7

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


☐ True☒ False

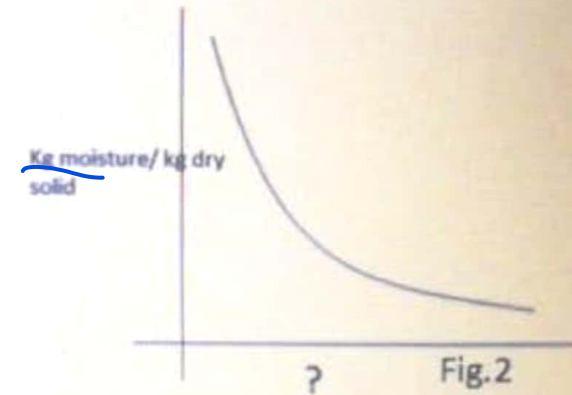
8

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. * 
(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 tray 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)

☐ 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

☒ 0.3769

$$Z = H N$$
$$H = Z / N$$
$$= 1.27 / 3.3752$$

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

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☐ 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)

True

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 tray 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

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

raw Hill.

ineering", vol. 1, Pergamon press.

↑ flow rate ↑ NOG ↓ HOG
of air

↑ $K_y a$ ↓ H_y ↑ 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)




Example 17.12: In a gas absorption experiment of CO₂ after steady state reached.
(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

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)

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

☐ 50mg/g☐ 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

In tray drier experiment, dry air was blown to the duct at $T = 50^\circ\text{C}$, 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 $T = 100^\circ\text{C}$) is 2.2564 kJ/g . * 
(3 Points)

☐ False

13

In tray drier experiment, dry air was blown at a rate of 0.06 (g/m².min), calculate the heat required for the Latent heat of vaporization of water (assume $h_{fg} = 2454$ kJ/kg) (3 Points)

☒ 2.71

☐ 1.33

☐ 7.21

☐ 3.13

14

In tray drier experiment, drying rate was investigated under the following conditions (2 Points)

• A. Constant air flow rate

• B. Variable air flow rate

• C. Constant air 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)

☐ False

13

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

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 h
was 3.3752 and the height of the tower was 1.27 m, then the height
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 absor
(2 Points)

☒ True

AA

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☒ False

21

In tray 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 ethanolicNaOH 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

Freundlich

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

☐ 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 experiment is(2 marks) *

Enter your answer

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) *

☒ 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 the -----(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 n
--(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

5. The name of experiment which You have used aquec
----- (2 marks) *

liquid liquid extraction

6. Transmittance is measured using specific gravity unit. (

☐ True

☒ False

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

☐ True

☒ False

8. Number of cycles in Soxhlet experiment will decrease the

AA

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✓ 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

forms.office.com



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 CO₂ 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 aqueous
----- (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) *

Fraundlich

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

☒ False

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

☐ True

☒ False

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

☐ True

☒ False

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

☐ True

☒ False

☒ False

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

☐ True

☒ False

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

☐ True

☒ False

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

☐ True

☒ False

☒ False

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

☐ True

☒ False

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

☐ True

☒ False

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

☐ True

☒ False

e on the adsorbent to concentration at constant .4
* temperature is called(1 mark)

frenlich

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

visible spectrophotometer

ne 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 NaOH
-----(2 marks)

liquid liquid extraction

12. The concentration of dye in the adsorption experiment was

Enter your answer

13. The equation that relates the amount of adsorbate on the adsorbent
temperature is called

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)

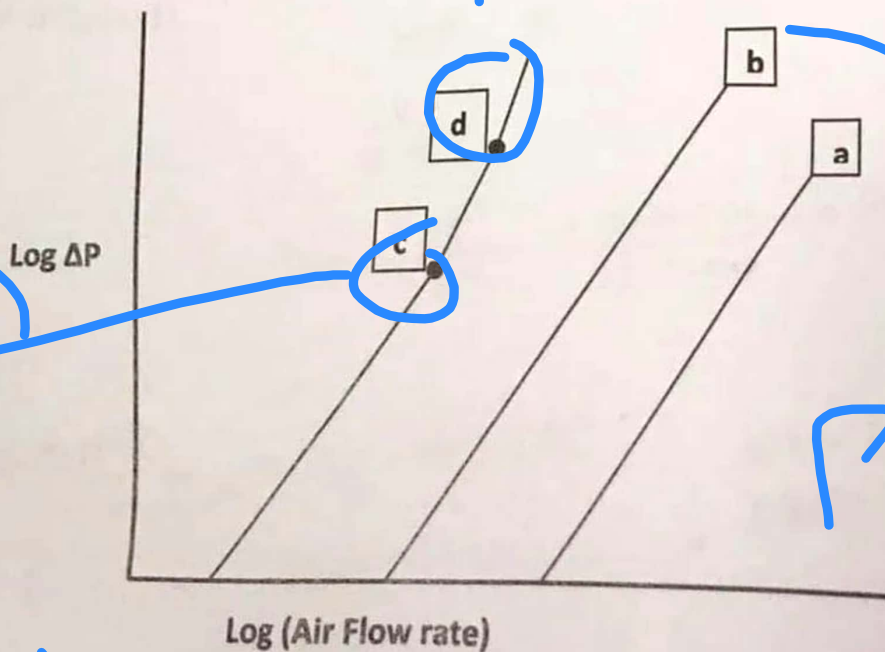
Answer By True or False:

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

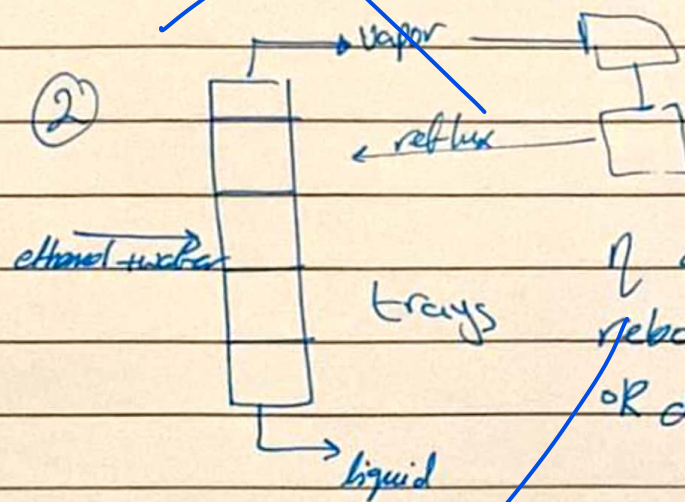
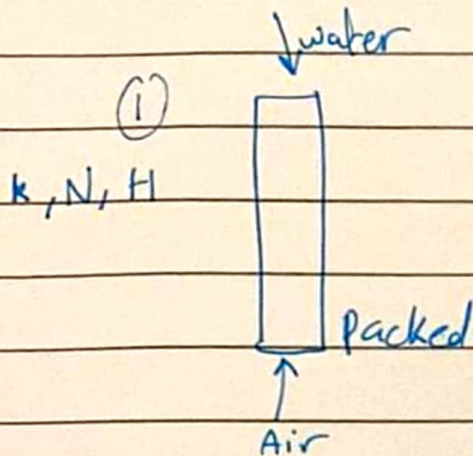
Increasing the flowrate of air in cooling tower decreases the number of transfer units *

(2 Points)

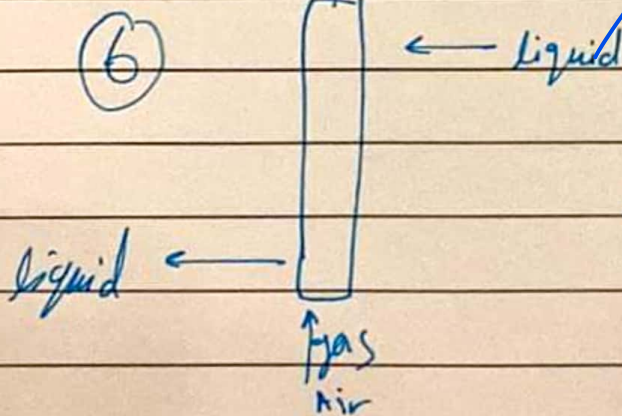
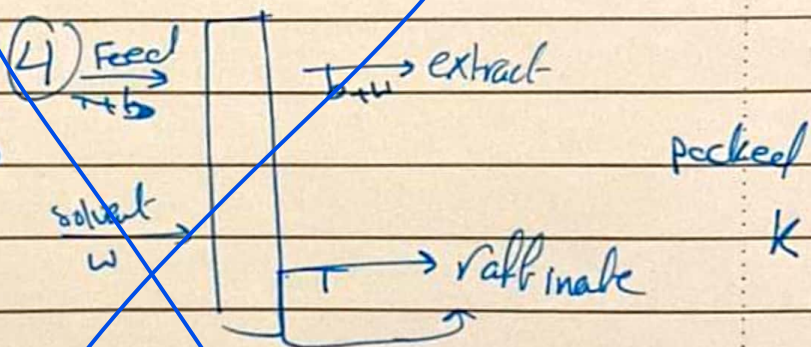
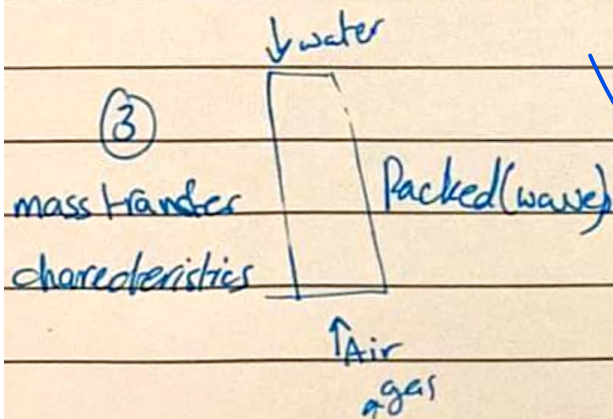
☐ True

☒ False

- 1- Gas absorption
- 2- distillation column
- 3- water cooling tower
- 4- liquid liquid extraction
- 6- wetted wall



η 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 cake

Hexane

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

☐ True

☒ False

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

☐ 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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Med

☐ 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



forms.office.com/Pages/ResponsePage.aspx?id=ul1A8Tw3IE6jDj5vz188_hnkgsPOirVOjW-8zTp1E9pUM0pKMDNQV0g2QIIKSzdHQUZONjIE0EE0MC4u

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. In concentric tube heat exchanger, the thermal efficiency of hot side is :
- A. $\eta_{hot} = \frac{T_{Cold} - T_{Hot}}{\Delta T_{max}}$
- B. $\eta_{hot} = \frac{\Delta T_{hot}}{\Delta T_{max}}$
- C. $\eta_{hot} = \frac{\Delta T_{max}}{\Delta T_{hot}}$
- D. $\eta_{hot} = \frac{(T_{Hot} - T_{Cold})}{\Delta T_{max}}$

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 (II)

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)

<input checked="" type="checkbox"/>	Sieve Size(mm)	0.063	0.09	0.15	0.35	0.5	0.85	1.2	2
<input checked="" type="checkbox"/>	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_{90} value from your graph .

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