

SEAT No. _____

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Sardar Patel University

B. Sc. (Semester-V) Examination

Industrial Chemistry Vocational

COURSE NO: US05CICV24 (Mass Transfer Operations)

Date: 29-12-2020, Tuesday

Time: 02:00pm – 04:00pm

Notes: Figures to the right indicate full marks.

Total marks: 70

Q.1 Answer the following Multiple choice questions. (All are compulsory) (10)

1. Separation by distillation is possible when relative volatility is _____ one.
A. Greater than
B. Less than
C. Equal
D. None of these
2. _____ is the temperature at which a liquid mixture of given composition start to vaporize as temperature increases.
A. Bubble point
B. Dew point
C. Feed point
D. None of these.
3. The boiling point of liquid increases with _____ in pressure.
A. Increases
B. Decreases
C. Constant
D. None of them
4. Gas absorption is also term as _____.
A. Scrubbing
B. Drying
C. Adsorption
D. None of these
5. The reverse of absorption is known as _____.
A. Desorption
B. Scrubbing
C. Adsorption
D. None of these
6. HETP is the height of a section of packing that will give the same separation as that achieved with _____ theoretical plate.
A. 1
B. 10
C. 2
D. 5
7. Crystallization is an operation in which solid particles are formed from _____.
A. Liquid solution
B. Slurry
C. Solvent
D. All of above
8. Crystallization is _____ operation.
A. Liquid-liquid
B. Solid-liquid
C. Both of them
D. None of them
9. Atomizer is the integral part of _____ dryer.
A. Rotary
B. Spray
C. Drum
D. Tunnel
10. For drying paper sheet _____ dryer is employed.
A. Drum
B. Tray
C. Tunnel
D. Rotary

[1]

(P.T.O.)

Q.2 Are the following statements true or false? (All are compulsory)

(08)

1. In the distillate use of heat is to separate the distillate from the entrainer. True / False?
2. If the feed mixture has the same vapor and liquid compositions at equilibrium then the distillation is normal. True / False?
3. Gas absorption is the operation of transferring solute component from liquid solvent to gas mixture. True / False?
4. Solubility of a gas increases with increase in temperature. True / False?
5. The liquid phase remaining before the formation of the crystals is called mother liquor. True / False?
6. Solubility is a concentration of solute in a saturated solution. True / False?
7. Moisture content may be expressed as wet basis and dry basis. True / False?
8. Tray dryers having long cycles 4 to 48 hrs per batch. True / False?

Q.3 Answer the following short questions (Attempt Any 10 out of 12)

(20)

1. What is reflux ratio?
2. Define a term distillation.
3. What is the meaning of volatility?
4. Define a term raffinate with reference to extraction.
5. Define a term extract with reference to extraction.
6. Define term selectivity with reference to extraction.
7. What is crystallization?
8. How saturated solution can be prepared?
9. Define a term supersaturation.
10. Give comparison between evaporation and drying.
11. Distinguish between adiabatic dryer and non-adiabatic dryer.
12. Define relative humidity & absolute humidity.

Q.4 Answer the following Long questions (Attempt Any 04)

(32)

1. With neat sketch discuss the Fractionating column in detail.
2. Write in detail on flash distillation and draw its sketch.
3. Discuss the various factors affect in selecting solvent for gas absorption.
4. Draw the neat sketch of packed column used for liquid-liquid extraction and explain in brief.
5. Explain the construction and working of Agitated crystallizer with suitable diagram.
6. Write a note on solubility curve & mechanism of crystal formation.
7. Discuss the construction and working of tray dryer with neat diagram.
8. With neat diagram explain the construction & working of fluidized bed dryer.

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