

(21/A-9)

SEAT No. _____

No. of Printed Pages : 02

SARDAR PATEL UNIVERSITY
EXTERNAL EXAMINATION
B.SC. INDUSTRIAL CHEMISTRY
(SIXTH SEMESTER)
US06CICH06: Mass Transfer Operations
THURSDAY, 4TH April, 2019

Time: 10:00 am to 1:00 pm

Total Marks: 70

Q-1 Answer the following multiple choice question.

[10]

- Above feed plate portion is in the continuous distillation termed as _____.
 - Rectifying section
 - Stripping section
 - Extract section
 - None of these
- Distillation temperature is always _____ than the boiling point of individual components in the steam distillation.
 - More
 - Equal
 - Less
 - None of these
- Reflux ratio is the essential accessory with _____.
 - Absorption column
 - Rectification column
 - Rotary disc column
 - None of these
- In falling rate period, rate of drying is _____.
 - Decreases
 - Constant
 - Increases
 - Random
- _____ dryer is used in ceramic industry.
 - Tunnel
 - Spray
 - Tray
 - Rotary
- Packing size should not be more than $1/8^{\text{th}}$ of column _____ in gas absorption.
 - Height
 - Length
 - Diameter
 - Width
- Supersaturation is achieved by _____ in vacuum crystallizer.
 - Adiabatic evaporation
 - Evaporation
 - Drying
 - Extraction
- The solubility of solute in a given solvent is _____ at different temperature in crystallization.
 - Different
 - Low
 - Same
 - High
- Selectivity should be _____ in liquid-liquid extraction.
 - =1
 - >1
 - 0
 - <1
- What is the use of plate columns?
 - Increases axial mixing
 - Reduces axial mixing and promotes a stage-wise type of contact
 - Reduces the cost
 - Reduces axial mixing by packing columns

Q-2 Answer any ten of following.

[20]

- Write in brief on bubble cap tray.
- Define distillation with example.
- Define steam distillation.
- Distinguish between adiabatic dryer and non-adiabatic dryer.

①

(P.T.O.)

5. Enlist the various heat carrier used in industrial dryer.
6. Write the function of cyclone in spray dryer.
7. Enlist the various effects of impurities on crystal formation.
8. Distinguish between plate column with packed column.
9. Define HETP in gas absorption.
10. Enlist the characteristics of tower packing.
11. Distinguish between distillation and extraction.
12. Define selectivity in extraction.

- Q-3** a. Derive the expression of minimum reflux ratio. [05]
 b. With neat diagram discuss fractionating column in detail. [05]

OR

- Q.3** a. Discuss the note on Azeotropic distillation. [05]
 b. Write a note on various plate used for phase contacting in distillation. [05]

- Q-4** Discuss the construction, working of Rotary dryer with neat diagram in detail. [10]

OR

- Q-4** Discuss the construction, working of Spray dryer with neat diagram in detail. [10]

- Q-5** Discuss in detail about the construction, working of Krystal crystallizer with neat diagram. [10]

OR

- Q-5** With neat sketch discuss the construction and working of packed column used in gas absorption. [10]

- Q-6** Explain the working of Basket extractor with neat sketch and enlist the factors influencing the rate of extraction in leaching. [10]

OR

- Q-6** Discuss the construction, working of continuous operated mixer-settler with neat diagram with merits & demerits. [10]

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