

SEAT No. \_\_\_\_\_

No. of Printed Pages: 2

[90]

# Sardar Patel University

B. Sc. (Semester – V) Examination

Date: 31-12-2020, Tuesday

Time: 02:00 – 04:00 pm

Industrial Chemistry Vocational

COURSE NO: US05CICV06 (Separation Techniques)

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 not possible when relative volatility is.....one.  
A. 1  
B.  $< 1$   
C. = 1  
D.  $\geq 1$
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. Enthalpy  
D. None of these.
3. The boiling point of liquid increases with \_\_\_\_\_ in pressure.  
A. Increases  
B. Decreases  
C. Constant  
D. None of these.
4. Gas absorption is also term as  
A. Scrubbing  
B. Drying  
C. Adsorption  
D. None of these
5. The reverse of absorption is?  
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. For common salt (NaCl) solubility is \_\_\_\_\_ of variation in temperature.  
A. Dependent  
B. Independent  
C. None of these
8. Solubility is expressed as parts by weight solute per \_\_\_\_\_ parts by weight solvent.  
A. 50  
B. 100  
C. 110  
D. 10
9. Atomizer is the integral part of \_\_\_\_\_ dryer.  
A. Rotary  
B. Spray  
C. Drum  
D. Tunnel
10. For drying paper sheet \_\_\_\_\_ dryer is employ.  
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. Rayleigh's equation is valid for Flash distillation. True / False?
2. Refluxing is the feature of Steam distillation. True / False?
3. In gas absorption packing size should not be more than 1/8th of column Length. True / False?
4. In absorption insoluble component of the gas is called Solute gas. True / False?
5. Magma is the mixture of mother liquor and Crude. True / False?
6. In Agitated crystallizer supersaturation is achieved by "Evaporation". True / False?
7. Spray dryer is useful for drying "Granules". True / False?
8. Drum dryer is useful for drying "Granules". True / False?

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

(20)

1. Define a term Distillation
2. Define a term Reflux ratio
3. Define a term Volatility
4. Differentiate between distillation and extraction.
5. Define a term Extract
6. Define a term Selectivity
7. Define a term Crystallization.
8. Define a term Saturation.
9. Define a term Supersaturation.
10. Give comparison between Evaporation and Drying.
11. Distinguish between adiabatic dryer and non-adiabatic dryer.
12. Explain equilibrium moisture and critical moisture content.

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

(32)

1. Write in brief with sketch on Fractionating column.
2. Write note on Azeotropic distillation.
3. Draw the neat sketch of packed column used for liquid-liquid extraction and explain in brief.
4. Explain in briefly the selection criteria for solvent to be used for liquid-liquid extraction.
5. Explain the construction and working of Agitated crystallizer with suitable diagram.
6. Explain the factors influencing the rate of extraction in leaching.
7. Explain the construction & working of Tray dryer with neat diagram.
8. Explain the construction & working of Tunnel dryer with neat diagram.

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