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SEAT No. _____

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SARDAR PATEL UNIVERSITY
SEMESTER EXAM
SEMESTER V, B.Sc INDUSTRIAL CHEMISTRY(Vocational)
US05CICV06 SEPARATION TECHNIQUES

DATE: 12th APRIL 2019

TIME: 10.00 A.M. TO 1.00 P.M.

12/04/2019, Friday

Q.1. Answer the following MCQs

(10)

1. Separation by distillation is possible only when relative volatility is ____
A. >1 B. <1 C. =1 D. 0
2. The boiling point of liquid increases with _____ in pressure.
A. Increase B. Decrease C. No relation D. Initially increase and then decrease
3. Gas absorption is also known as _____.
A. Sedimentation B. Clarification C. Centrifugation D. Scrubbing
4. In gas absorption packing size should not be more than $1/8^{\text{th}}$ of column _____.
A. Length B. Height C. Diameter D. Depth
5. In crystallization mass transfer occurs from solution to _____ phase.
A. Solid B. Liquid C. Slurry D. Gas
6. Solubility is expressed as parts by weight of solute per _____ parts by weight solvent.
A. 10 B. 100 C. 1000 D. None of these
7. Atomizer is an integral part of _____ dryer
A. Rotary B. Drum C. Spray D. Tunnel
8. Drum dryer is useful for the drying of _____.
A. Slurries B. Granules C. Lumps D. All of these
9. In Krystal crystallizer, supersaturation is achieved by _____.
A. Cooling B. Evaporation C. Adiabatic cooling D. Chilling
10. Refluxing is a feature of _____ distillation
A. Simple B. Rectification C. Flash D. Steam

(1)

Q.2 Answer the following short questions (Any 10) (20)

1. What is bubble point in distillation?
2. State Raoult's law
3. Give limitations of McCabe Thiel method
4. Define selectivity w.r.t extraction
5. What is HETP? Enlist the factors on which it depends
6. State advantages and disadvantages of packed columns
7. Define the term saturation and super saturation w.r.t crystallization
8. Explain in brief the effect of impurities on crystal formation
9. Give classification of crystallizers.
10. Differentiate between evaporation and drying
11. Explain the function of scraper in drum dryer
12. Enlist various heat carriers used in industrial dryers

Q.3 Write a detailed note on fractional distillation giving neat and labeled diagram. (10)

OR

Q.3 Derive an equation of operating lines. (10)

Q.4 (a) Explain the factors to be considered for selecting a solvent for absorption (05)

Q.4 (b) Explain the factors to be considered for selecting a solvent for liquid extraction (05)

OR

Q.4 (a) With the help of neat diagram discuss about Rotary disc contactor (05)

Q.4 (b) With the help of neat diagram discuss about batch mixer settler (05)

Q.5 (a) Write a note on Swenson walker crystallizer (05)

Q.5 (b) Write a note on Krystal crystallizer (05)

OR

Q.5 (a) Discuss about factors influencing rate of extraction in leaching. (05)

Q.5 (b) Discuss about Basket extractors. (05)

Q.6 (a) Discuss the terms critical moisture content and equilibrium moisture content (05)

Q.6 (b) Present a brief account of tray dryer (05)

OR

Q.6 (a) Give classification of dryers with examples of each class (05)

Q.6 (b) Present a brief account of spray dryer. (05)

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