

**III B.Tech II Semester Supplementary Examinations, April/May 2005**  
**MASS TRANSFER OPERATIONS-II**  
**(Chemical Engineering)**

**Time: 3 hours****Max Marks: 70**

**Answer any FIVE Questions**  
**All Questions carry equal marks**

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1. (a) What is differential distillation? Derive Rayleigh equation.  
(b) Explain the T-x, y diagram with a neat sketch
2. Write short notes on
  - (a) Feed Tray location
  - (b) Optimum reflux ratio
  - (c) Stripping section in the distillation column
  - (d) Batch distillation with constant reflux ratio.
3. Explain in detail the methods available to separate the components of binary system forming an azeotrope. Illustrate with one typical example.
4. (a) Discuss about the applications of liquid extraction.  
(b) Write about the notation scheme used to describe the concentration and amounts of ternary mixtures for the purpose of discussing both equilibrium and material balances.
5. Classify and discuss the equipment for industrial liquid liquid extraction operation.
6. Explain Continuous-Countercurrent Decantation (CCD).
  - (a) with simple flow sheet
  - (b) flow sheet with intermediate agitation and filtration of washed solids.
7. Adsorption on 6x10mesh activate carbon is being considered to recover methyl ethyl ketone from an air stream at 25deg C and 1 atm. The air flow is  $12000m^3 / \text{min}$ . an the air has 0.40 kg MEK /  $1000m^3$ .If the superficial velocity is 0.5m/s and an absorption cycle of at least 8hr is desired. About what bed dimensions should be used assume the bulk density of the carbon is  $30\text{Kg} / m^3$
8. (a) Explain the working principle involved in Higgins contactor with a neat diagram?  
(b) Write short notes on simulation of moving beds.

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