**ASSIGNMENT**

SECTION-1

1. Derive an expression for HTU and NTU based on Local Mass Transfer (NiG, HiG)

2. Derive an expression for HTU and NTU (NOL, HOL) based on liquid phase basis overall MTC (Stripping)

3. Given, y=mx,

(a) Find the minimum liquid flowrate for absorption

(b) Prove

Where A=L/G.m

4. Given, y=mx,

(a) Find the minimum gas flow rate for absorption

(b) Prove

Where S=m.G/L

5) What is the significance of HTU and NTU?

SECTION -2

5. Solve the below problem 6.1 -

2

6) Solve problem 6.4-



SECTION-3

1. A solute gas is absorbed from a dilute gas-air mixture by counter current scrubbing with a solvent in a packed tower. The equilibrium relation is Y = m X. If (99%) of the solute is to be recovered using a liquid rate of 1.75 times the minimum and the height of transfer unit is (1 m). What the height of packing will be required.
2. A mixture of ammonia and air is scrubbed in a plate column with fresh water. If the ammonia concentration is reduced from 5% to 0.5% and given that: Y = 2 X.
3. Calculate the No. of theoretical plate and the tower height.

Given that: L = 0.65 Kg/m2 .s and G = 0.4 Kg/m2.s, KOG.a = 0.0008 Kmol/m3.s.kPa

b. Calculate the No. of theoretical plate, given that: LG = 2 LGmin .

c. Calculate L/ G if the actual No. of plates = 12, and the column efficiency = 0.5.

d. Calculate the theoretical and actual No. of plates, give that: L /G = 1.5 L/ G min and Emv = 0.7

e. Given the concentration of a gas in the two adjacent plates are 4% and 3.3%. Calculate Emv and Eml if L = 0.65 Kg/m2 .s and G = 0.4 Kg/m2 .s.