

CHE 305 – Separation Processes
Spring 2010 – Quiz 5

Given:

- Gas velocity = 0.75 m/s
- McCabe-Thiele showed 19 theoretical stages (@ $\eta = 100\%$)
- $V = 100$ kmol/hr
- $\rho_{\text{gas}} = 0.04$ mol/L
- Each downcomer occupies 10% of the tray area
- Tray spacing is 0.8 m
- Partial Reboiler, Total Condenser

Use the design criteria to do the following:

- a. Estimate column height (m) if the overall efficiency is 75%.

- b. Determine the volumetric gas flow rate.

- c. Determine the bubble area.

- d. Determine the column cross-sectional area.

- e. Determine the column diameter.