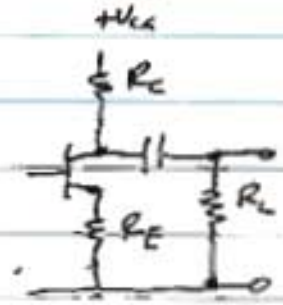
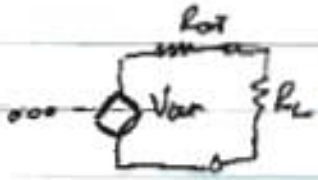
Max & Min Allowable signal amplitude



$R_L = \infty$ (open circuit)

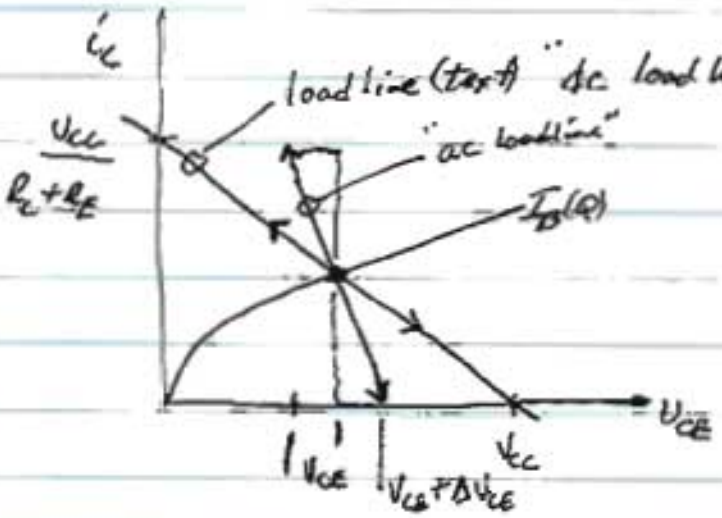
$R_L \neq \infty$ (load in place)

$R_L = 0$ (shorted output)



V_{ac} (max, min)

$= f(R_C, R_E, R_L)$

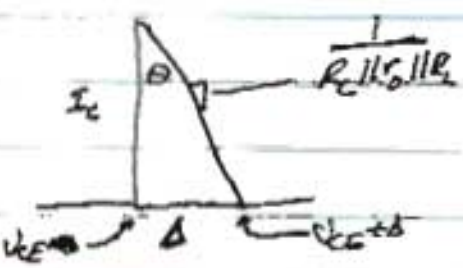


load in linear-equivalent model is $R_C \| r_o \| R_L$

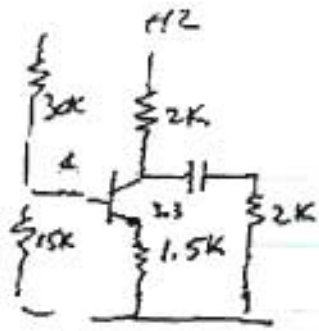
$R_C \| r_o \| R_L < R_L < R_C + R_E$

output swings between

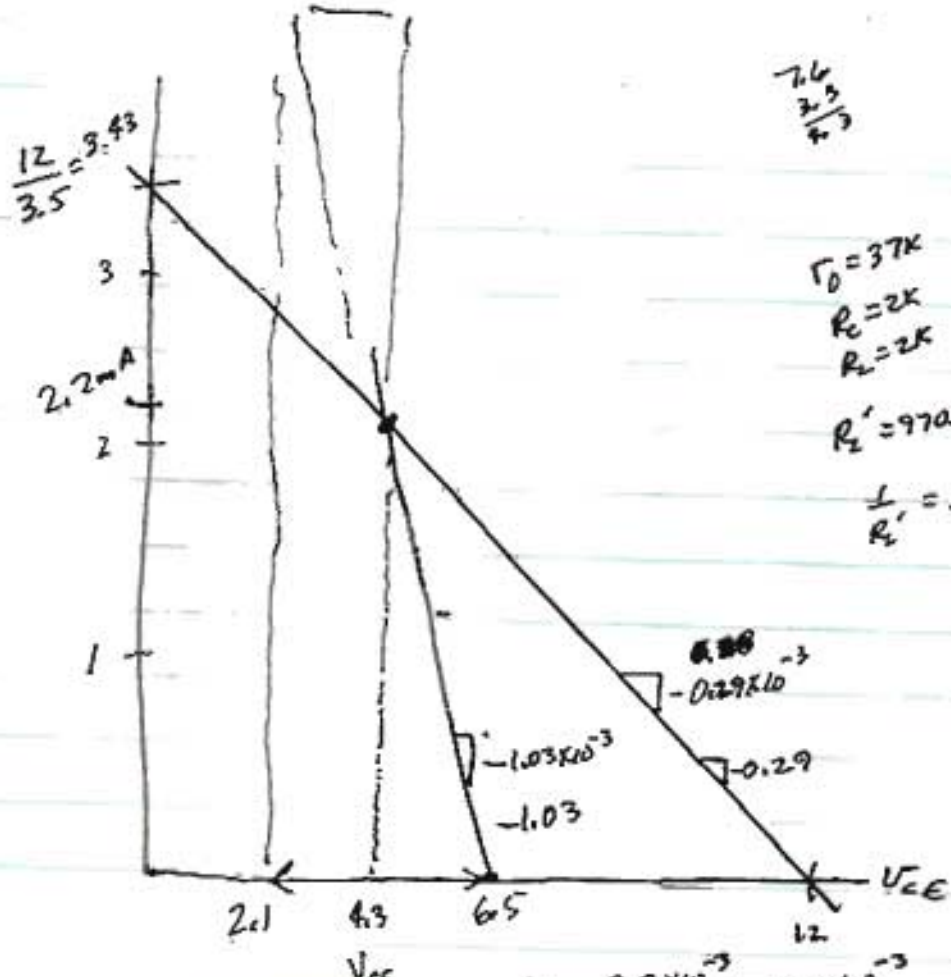
$(V_{CE} - \Delta) \leq v_{CE} \leq (V_{CE} + \Delta)$



12/3/07 2/4



7.6
2.3
4.3



$r_o = 37K$

$R_c = 2K$

$R_L = 2K$

$R_L' = 970\Omega$

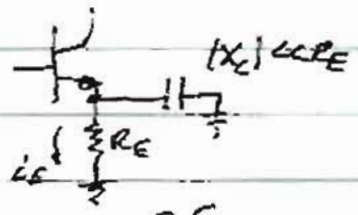
$\frac{1}{R_L'} = .00103$

$\frac{\Delta y}{\Delta x} = \frac{2.2 \times 10^{-3}}{\Delta} = -1.03 \times 10^{-3}$

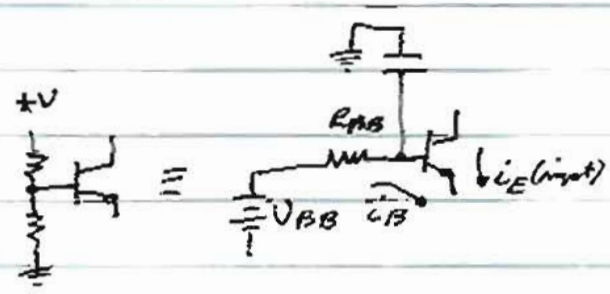
$\Delta = \frac{2.2}{1.03} = 2.2$

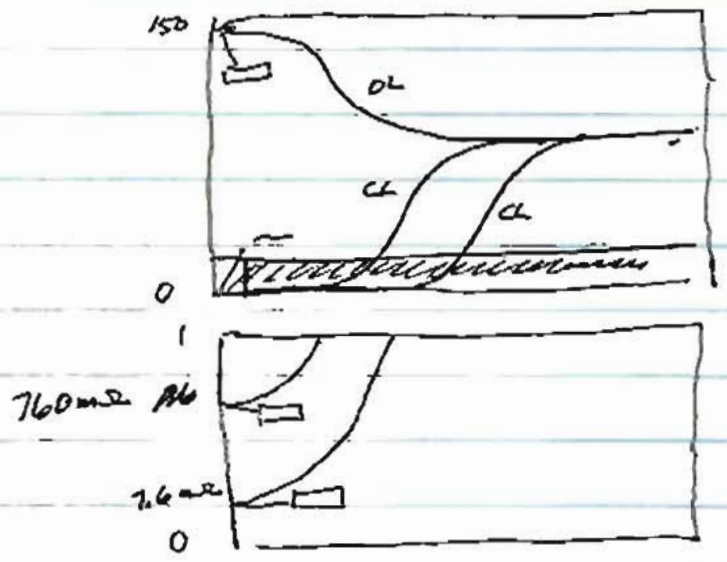
$V_{CE}(max) = 4.3 + 2.2 = 6.5\,V$

$V_{CE}(min) = 4.3 - 2.2 = 2.1\,V$



CE





$\frac{150}{2\times10^{+}} \quad 7540^{-4}$

.0075

150

$\frac{150}{20} = .766$

"βA" = 20,000, 200 — 150

1 — 1

1.0 — 1500

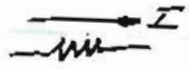
$Z' = Z/(1+\beta A$

$$A_{CL} = \frac{A_{OL}}{1 + \beta A_{OL}}$$

↑ measured

↑ $\beta = \frac{R_1}{R_1 + R_2}$ from schematic

Calc A_{OL} "measured value"



measure I, V

Calc $\frac{V}{I} = R$ measured

$R = \frac{\rho L}{A}$ Calc "by hand"

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measure A_{OL}

R_{in} measured on open loop 1k

R_{in} measured on A=10 50 ~~measured~~ millivolts

A_{OL} measured on open loop

$R_{in}' = R_{in}(A_{OL}) / (1 + \beta A_{OL})$

β ← $\frac{R_1}{R_1 + R_2}$ spec'd in schematic

By-hand

$\frac{10^3}{20 \times 10^3} = 0.05\ \Omega$