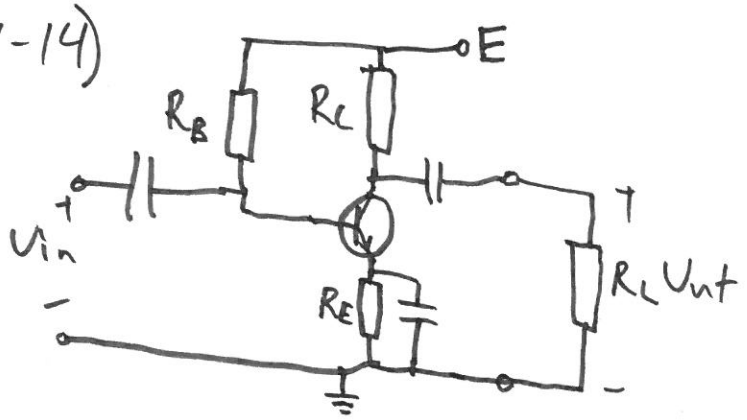
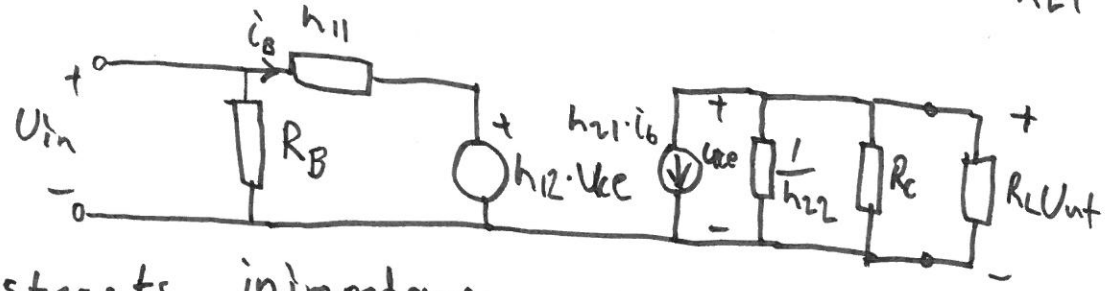
4-14)



$R_B = 560\,k\Omega$
$R_C = 2\,k\Omega$
$R_E = 1\,k\Omega$
$R_L = 2\,k\Omega$

$h_{11} = 2\,k\Omega$
$h_{12} = 2 \cdot 10^{-4}$
$h_{22} = 50\,\mu\Omega^{-1}$
$h_{21} = 300$

ekvivalent småsignalsschema:



stegets inimpedans:

$$Z_{in} = R_B // h_{11} \approx h_{11} \left(\text{då } R_B \gg h_{11}\right) = 2\,k\Omega$$

stegets utimpedans:

$$Z_{ut} = \frac{1}{h_{22}} // R_C = 1.8\,k\Omega$$

stegets spänningsförstärkning:

① $U_{in} = h_{11} \cdot i_b + h_{12} \cdot U_{ce}$

② $U_{ut} = -h_{21} \cdot i_b \cdot Z_{ut} // R_L$

$U_{ut} = U_{ce}$ & ② i ① ger:

③ $U_{in} = h_{11} \cdot i_b - h_{12} \cdot h_{21} \cdot i_b \cdot Z_{ut} // R_L$

$$F = \frac{U_{ut}}{U_{in}} \overset{③ \text{ & } ②}{=} \frac{-h_{21} \cdot i_b \cdot Z_{ut} // R_L}{h_{11} i_b - h_{12} \cdot h_{21} \cdot i_b \cdot Z_{ut} // R_L} = \frac{-h_{21} \cdot Z_{ut} // R_L}{h_{11} - h_{12} \cdot h_{21} \cdot Z_{ut} // R_L} = \frac{1}{h_{12} - \frac{h_{11}}{h_{21} \cdot Z_{ut} // R_L}} =$$

$= -147$ ggr