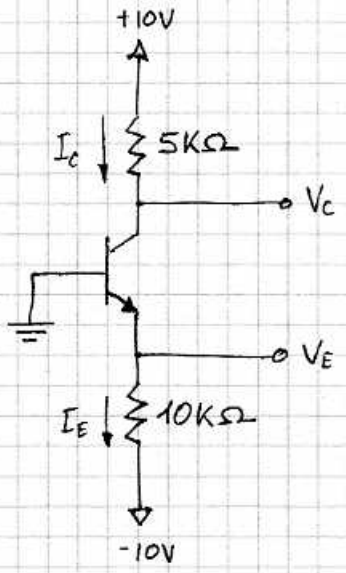
P205 es 4.8



$V_E = -0,7\,V$

$\beta = 50$

$I_E = ?$

$I_B = ?$

$I_C = ?$

$V_C = ?$

$V_E = -V_{BE} \rightarrow V_{BE} = 0,7\,V$

$$I_E = \frac{V_E - (-10)}{10\,K\Omega} = 0,93\,mA$$

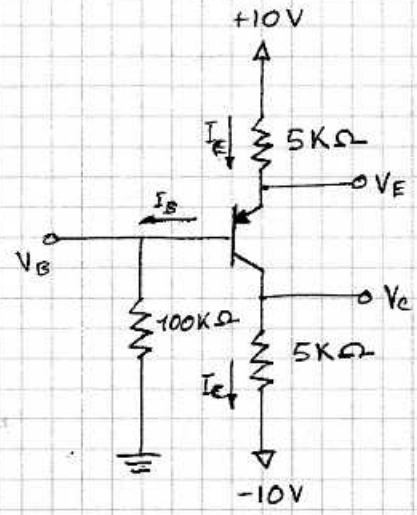
$\beta = 50 \rightarrow \alpha = \frac{\beta}{(\beta+1)} = 0,9803$

$I_E = I_C/\alpha \rightarrow I_C = \alpha I_E = 0,912\,mA$

$I_B = I_C/\beta = 18,23\,\mu A$

$(10 - V_C) = 5\,K\Omega \cdot I_C \rightarrow V_C = -(5\cdot 10^3 \cdot 0,912\cdot 10^{-3}) + 10 = 5,44\,V$

P205 es 4.9



$V_B = 1,0\,V$

$V_E = 1,7\,V$

$\alpha = ?$

$\beta = ?$

$V_C = ?$

$V_{EB} = V_E - V_B = 0,7\,V$

$$I_E = \frac{10 - V_E}{5\,K\Omega} = 1,66\,mA$$

$$I_B = \frac{V_B}{100K\Omega} = 10\mu A$$

$$I_C = I_E - I_B = 1{,}65\,mA$$

$$I_B = I_C/\beta \rightarrow \beta = \frac{I_C}{I_B} = 165$$

$$\alpha = \frac{\beta}{\beta+1} = \frac{165}{166} = 0{,}994$$

$$(V_C + 10) = 5K\Omega \cdot I_C \rightarrow V_C = (5K\Omega \cdot I_C) - 10 = -1{,}75\,V$$

P209 es. 4.11

$V_A = 100V$

$I_{C1} = 0{,}1\,mA \quad r_{o1} = ?$

$I_{C2} = 1\,mA \quad r_{o2} = ?$

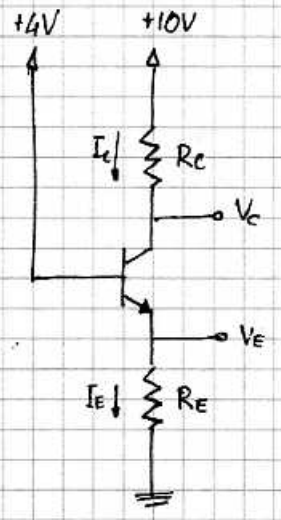
$I_{C3} = 10\,mA \quad r_{o3} = ?$

$$r_{o1} = \frac{V_A}{I_{C1}} = 1M\Omega$$

$$r_{o2} = \frac{V_A}{I_{C2}} = 100K\Omega$$

$$r_{o3} = \frac{V_A}{I_{C3}} = 10K\Omega$$

P213 es 4.14



$I_C = 0{,}5\,mA$

$V_{CB} = 2V$

$\alpha \approx 1$

$R_E = ?$

$R_C = ?$

$I_E = I_c/\alpha = 0{,}501\ mA$

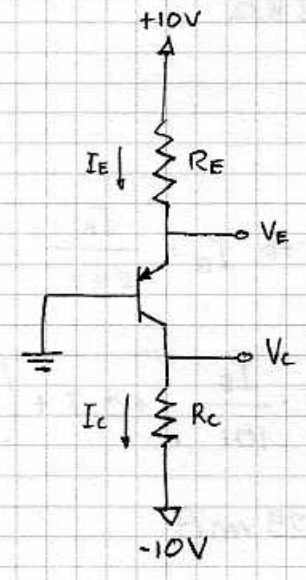
$V_e = V_{CB} + V_B = 6\ V$

$R_c = \dfrac{(10 - V_c)}{I_c} = 8K\Omega$

$V_E = V_B - V_{BE} = 3{,}3\ V$

$R_E = \dfrac{V_E}{I_E} = 6{,}6\ K\Omega$

P 214 es. 4.16



$I_c = 1\ mA$

$V_{CB} = 4\ V$

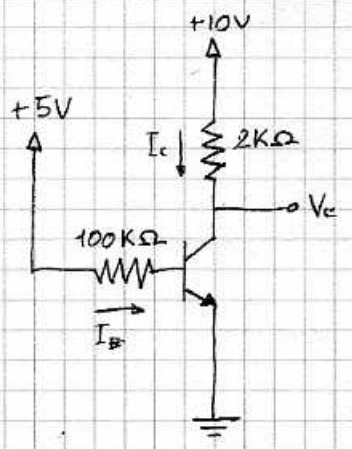
$\alpha \approx 1$

$V_{EB} = 0{,}7\ V$

$I_E = \dfrac{(10-0{,}7)}{R_E} = \alpha I_c \rightarrow R_E = \dfrac{(10-0{,}7)}{\alpha I_c} = 9{,}3\ K\Omega$

$I_c = \dfrac{(4-(-10))}{R_c} \rightarrow R_c = \dfrac{(4-(-10))}{I_c} = 6\ K\Omega$

P 214 esempio 4.6



$\beta = 100$

$I_B = \dfrac{5 - V_{BE}}{100K\Omega} = 43\ \mu A$

$I_c = \beta \cdot I_B = 4{,}3\ mA$

$I_E = I_B + I_c = 4{,}343\ mA$

$V_c = 10 - (2K\Omega \cdot I_c) = 1{,}4\ V$