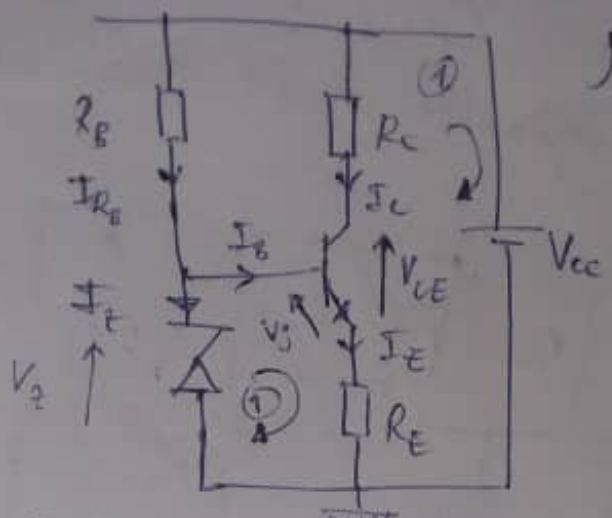
Exo2 : $V_y = 0$; $V_d = i_z = 0$ $V_z = 5,6\,V$

$\beta = 200$ $V_j = 0,6$ ($V_j = V_{BE}$)



1) Ng I_c est independant de R_c

$I_E = I_B + I_C = I_B + \beta I_B = (\beta+1) I_B$

or $\beta \gg 1 \Rightarrow (\beta+1) I_B \simeq \beta I_B$

$\Rightarrow I_C \simeq I_E$

dnc appliqu maille ① :

$V_j + R_E I_E - V_z = 0 \Rightarrow I_E = \dfrac{V_z - V_j}{R_E}$ or $I_E = I_C$

$\Rightarrow \boxed{I_C = \dfrac{V_z - V_j}{R_E}}$ ⇒ (independant de R_c)

$= 12,5\,mA$

2) I_z ? $I_z = I_{R_B} - I_B$ or $I_{R_B} = \dfrac{V_{cc} - V_z}{R_B}$

$\Rightarrow I_z = \dfrac{V_{cc} - V_z}{R_B} - I_B$ et $I_B = \dfrac{I_C}{\beta}$

$\Rightarrow I_z = \dfrac{V_{cc} - V_z}{R_B} - \dfrac{I_C}{\beta} = \dfrac{V_{cc} - V_z}{R_B} - \dfrac{V_z - V_j}{\beta R_E}$

$= \dfrac{12 - 5,6}{600} - \dfrac{5,6 - 0,6}{200 \times 400}$ $\Rightarrow I_z = 0,01274\,A$

$\Rightarrow \boxed{I_z = 12,74\,mA}$

3) V_{CE} ? on applique maille ① $\Rightarrow \boxed{V_{CE} = V_{cc} - I_C (R_E + R_C)}$

$V_{cc} - R_E I_C - V_{CE} - R_C I_C = 0$

$= 12 - 0,0125\,(400 + 100)$

$\Rightarrow \boxed{V_{CE} = 5,75\,V}$