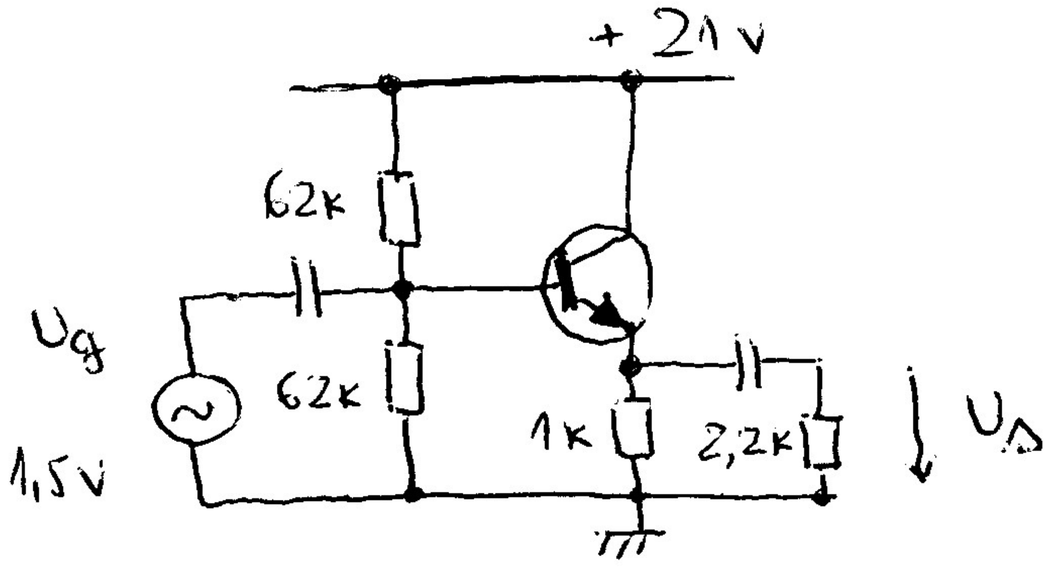
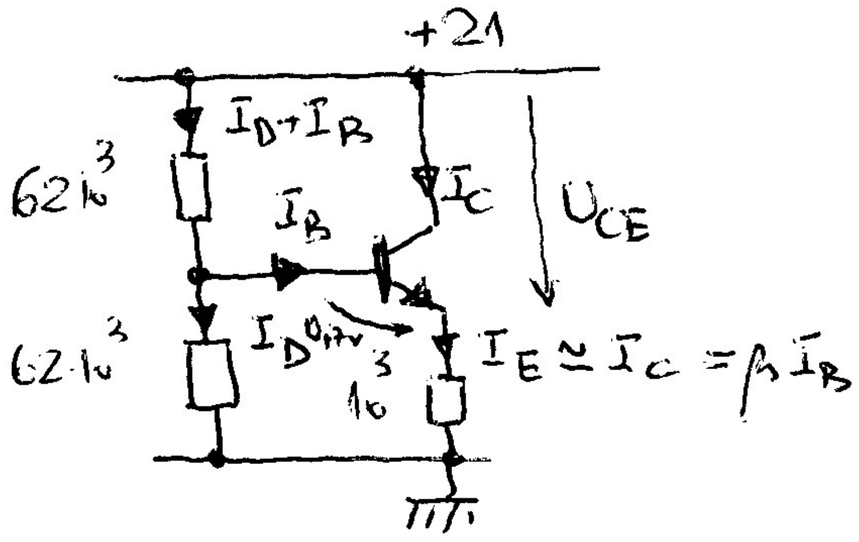


Schema echivalenta de cc.

$\beta = 100$

Sa cer I_C, U_{CE}

U_s



Ecuatii de ochiuri:

$$\begin{cases} 21 = (I_D+I_B)62\cdot10^3 + I_D\cdot62\cdot10^3 \\ I_D\cdot62\cdot10^3 = 0,7 + \beta I_B\cdot10^3 \\ 21 = U_{CE} + \beta I_B\cdot10^3 \end{cases}$$

Din prima 2 rezulta I_B:

$$21 = I_B\cdot62\cdot10^3 + 2I_D\,62\cdot10^3$$
$$21 = I_B\cdot62\cdot10^3 + 2\cdot0,7 + 2\cdot100\cdot10^3 I_B$$
$$21 - 1,4 = I_B(62\cdot10^3 + 200\cdot10^3)$$
$$I_B = \frac{19,6}{262}\cdot10^{-3} = \frac{19,6}{262}\ \mu A$$

19,6 | 262
1834 | 0,075
1260

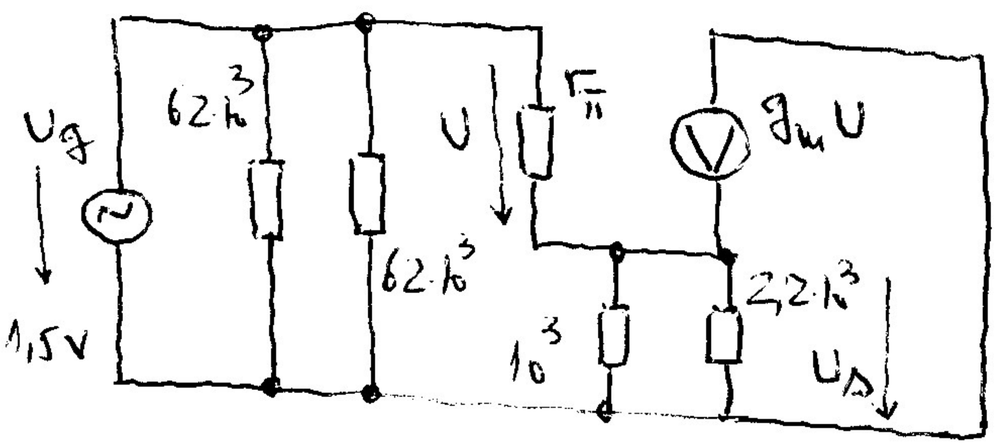
2,20 | 3,2
192 | 0,69
280

$I_B = 0,075\ \mu A$

$\boxed{I_C} = \beta I_B = 100\cdot0,075 = \boxed{7,5\ \mu A}$

$\boxed{U_{CE}} = 21 - 7,5\,10^{-3}\,10^3 = \boxed{13,5\ V}$

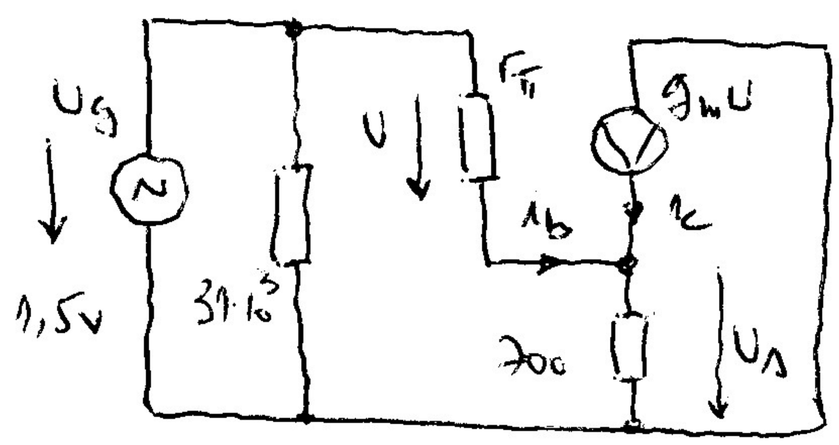
Schema echivalenti de ca



& simplificam inlocuind rezistentele paralel cu rezistenta echivalenta

$62\cdot10^3 \| 62\cdot10^3 = 31\cdot10^3$

$\frac{10^3\cdot2,2\cdot10^3}{10^3+2,2\cdot10^3} = \frac{2,2}{3,2}10^3 \simeq 700$



$g_m = 40 I_C = 40\cdot7,5\cdot10^{-3}$
$= 0,3\ 1/\Omega$

$r_\pi = \frac{\beta}{g_m} = \frac{100}{0,3} = 330\ \Omega$

$A_M = \frac{U_s}{U_g}$

$A_U = \frac{700(i_c+i_b)}{U+700(i_c+i_b)} =$

$= \frac{700\left(g_m U + \frac{U}{r_\pi}\right)}{U+700\left(g_m U+\frac{U}{r_\pi}\right)} =$

$= \frac{700\left(\frac{g_m r_\pi + 1}{r_\pi}\right)}{1+700\cdot\frac{g_m r_\pi+1}{r_\pi}} =$

$= \frac{700(\beta+1)}{r_\pi+700(\beta+1)} \simeq \frac{700\cdot100}{330+700\cdot100} \simeq 1$

$\boxed{U_s \simeq U_g = 1,5V}$