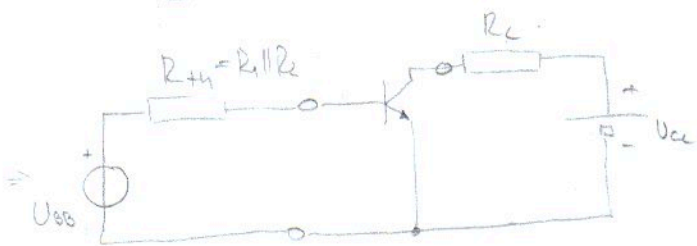
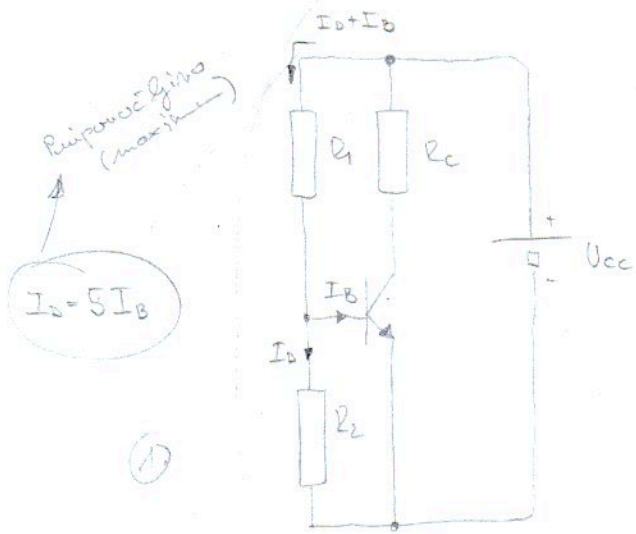


$$U_{CE} = U_{CE} = \frac{U_{CC}}{2} = 5V$$

$$R_2 = \frac{U_{BE}}{I_B} = \frac{U_{BE}}{\beta \cdot I_B} = \frac{0.6V}{5 \cdot 50\mu A} = \boxed{2.4k\Omega}$$

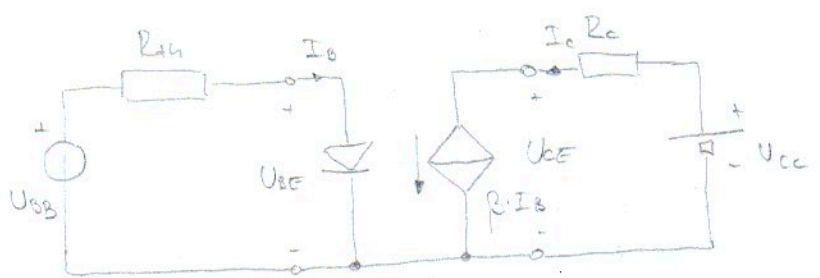
Dołoczi \$R_1\$ i \$R_2\$

Frekwencja analiza



$$U_{BE} = \frac{U_{CC} \cdot R_2}{R_1 + R_2}$$

2. Ustawiasz equivalent model:



4. Imadla:

$$\frac{U_{CC} \cdot R_2}{R_1 + R_2} - I_B \cdot \frac{R_1 \cdot R_2}{R_1 + R_2} - U_{BE} = 0$$

$$U_{BE} - I_B R_{th} - U_{BE} = 0$$

$$U_{CC} - I_C R_C - U_{CE} = 0 \Rightarrow I_C = \frac{U_{CC} - U_{CE}}{R_C} = \frac{10V - 5V}{1k\Omega} = \boxed{5mA}$$

$$I_0 + I_C + I_E = 0$$

$$I_C = \beta \cdot I_B$$

$$I_B = \frac{I_C}{\beta} = \frac{5mA}{100} = \boxed{50\mu A}$$

$$\frac{U_{cc} R_2}{R_1 + R_2} - I_B \frac{R_1 R_2}{R_1 + R_2} - U_{BE} = 0$$

$$\frac{U_{cc} R_2 - I_B R_1 R_2}{R_1 + R_2} = U_{BE}$$

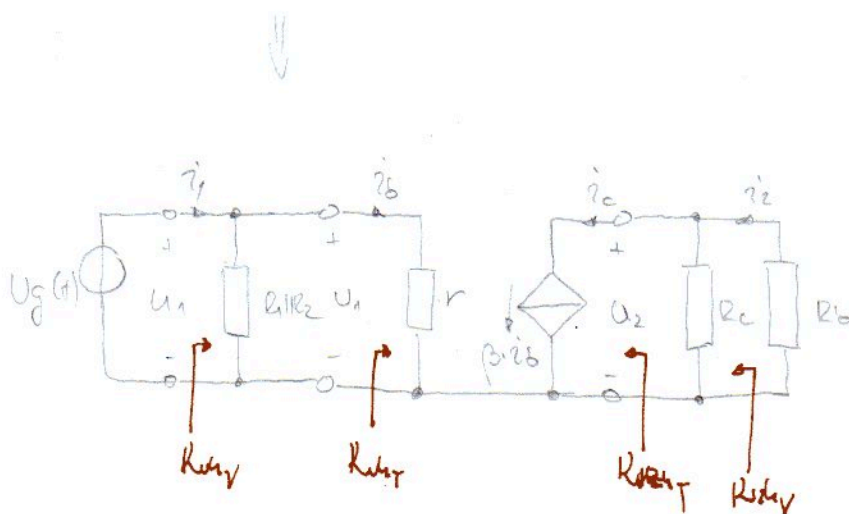
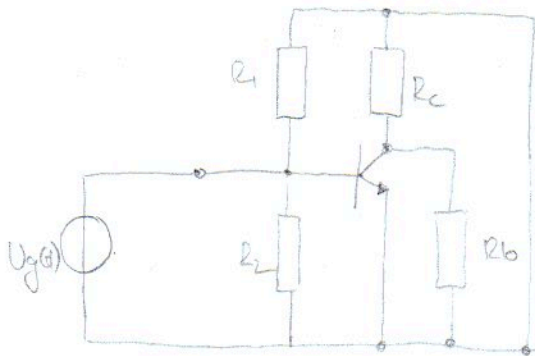
$$U_{BE} R_1 + U_{BE} R_2 = U_{cc} R_2 - I_B R_1 R_2$$

$$R_1 (U_{BE} + I_B R_2) = U_{cc} R_2 - U_{BE} R_2$$

$$R_1 = \frac{R_2 (U_{cc} - U_{BE})}{U_{BE} + I_B R_2} = \frac{2,4 \text{ k}\Omega (10 \text{ V} - 0,6 \text{ V})}{0,6 \text{ V} + 50 \mu\text{A} \cdot 2,4 \text{ k}\Omega} = \boxed{31,33 \text{ k}\Omega}$$

Lastnost:

Iskrensko nadomestno vezje



$$= r_E \cdot \frac{U_T}{|I_{E2}|} = \frac{U_T}{I_{E2}} = \frac{25,85 \text{ mV}}{5 \text{ mA}} = \boxed{5,17 \Omega}$$

$$R_{kh1} = (1 + \beta) \cdot r_E = 101 \cdot 5,17 = \boxed{522,17 \Omega}$$

$$R_{kh2} = R_{kh1} \parallel R_1 \parallel R_2 = \boxed{423,07 \Omega}$$

$$R_{kh3} = \infty$$

$$R_{kh4} = R_{kh3} \parallel R_C = R_C = \boxed{1 \text{ k}\Omega}$$

$$A_{u_T} = \frac{u_2}{u_1}$$

$$u_2 = -i_c \cdot R_c \parallel R_b$$

$$u_1 = i_b \cdot R_{inT}$$

$$i_c = \beta \cdot i_b$$

$$i_b = \frac{u_1}{R_{inT}}$$

$$u_2 = -\beta \cdot \frac{u_1}{R_{inT}} \cdot R_c \parallel R_b \Rightarrow \frac{u_2}{u_1} = \frac{-\beta \cdot R_c \parallel R_b}{R_{inT}}$$

$$= \frac{-\beta \cdot R_c \parallel R_b}{(1+\beta) \cdot r_E} = \boxed{-95,75}$$

$$A_{i_T} = \frac{i_c}{i_b} = \frac{\beta \cdot i_b}{i_b} = \boxed{\beta} = \boxed{1000}$$

$$A_{i_V} = \frac{i_2}{i_b} = \frac{i_2}{i_c} \cdot \left(\frac{i_c}{i_b} \right) = \frac{i_2}{i_c} \cdot A_{i_T} =$$

$$u_2 = -i_c \cdot R_c \parallel R_b = i_2 \cdot R_b$$

$$\Rightarrow \frac{i_2}{i_c} = - \frac{R_b}{R_b \parallel R_c} = - \frac{R_b}{\frac{R_b R_c}{R_b + R_c}} = \frac{R_b + R_c}{R_c}$$

$$= - \frac{R_c}{R_c + R_b} \cdot A_{i_T} = - \frac{2 \text{ k}\Omega}{1 \text{ k}\Omega} \cdot 1000 = \boxed{-200000}$$

$$A_{P_V} = A_{i_V} \cdot A_{u_T} = -200000 \cdot (-95,75) = \boxed{19,15 \text{ M}}$$