ELEKTRONIKA 1 – 1. ISPITNI ROK (12.2.2014.)

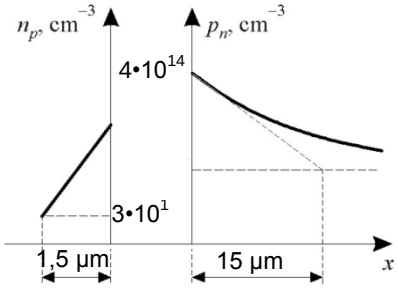
RJEŠENJA

1.

a) $U_D = 0{,}585$ V

b) $I_S = 5 \cdot 10^{-13}$A, $I_D = 3{,}34$ mA

c)



d) $u_d = 0{,}564[\text{V}] + 10{,}8\sin(\omega t)$ [mV]

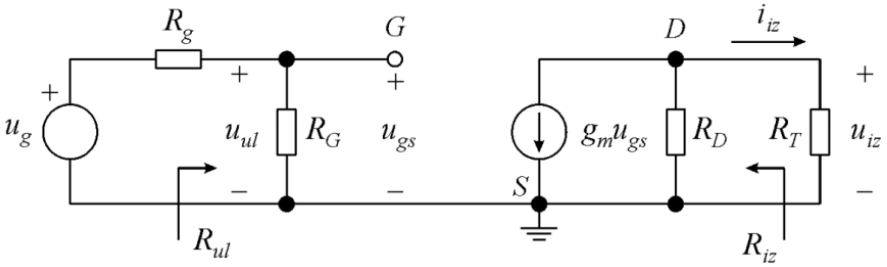
2.

a) $I_D = 2{,}25$ mA

b) $g_m = 3$ mA/V, $r_d = \infty$, $\mu = \infty$

3.

a)

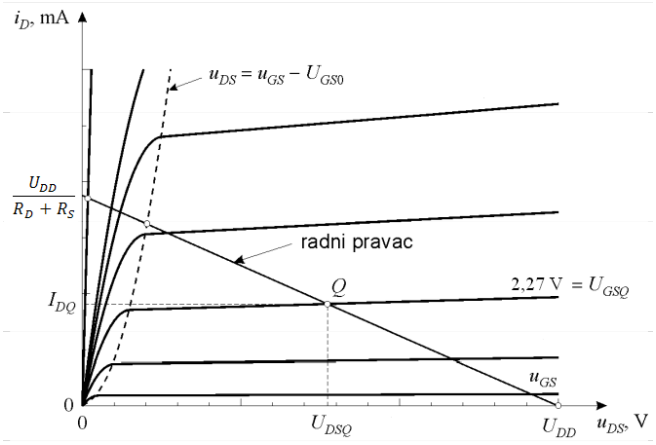


$$g_m = 3{,}975\,\frac{\text{mA}}{\text{V}},\ r_d = \infty$$

$$A_{Vg} = -4{,}95$$

b) $U_{GSQ} = 2{,}27$ V, $I_{DQ} = 3{,}53$ mA, $U_{DSQ} = 2{,}71$ V

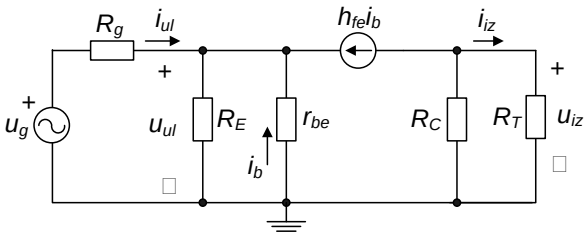
c)



4.

a) $I_{BQ} = 15{,}1\ \mu\text{A}$, $I_{CQ} = 1{,}51\ \text{mA}$, $U_{CEQ} = 6{,}39\ \text{V}$

b)



$A_V = 96{,}3$

$A_I = 0{,}58$

$R_{ul} = 16{,}3\ \Omega$

$A_{Vg} = 3{,}04$

5.

a) $u_{ul2}\left(1 + \frac{R_4}{R_3}\right) - u_{ul1}\left(1 + \frac{R_2}{R_1}\right)\frac{R_4}{R_3} = u_{izl}$

b) $R_1 = R_2 = R_3 = R_4$