

REŠENJA ZADATAKA

1. a) $R_1 = 113\text{k}\Omega$; $R_2 = 7,78\text{k}\Omega$; $R_3 = 14,1\text{k}\Omega$; $R_4 = 1,2\text{k}\Omega$.

b) $a = \frac{v_i}{v_g} = g_{m1}g_{m2} [R_2 \parallel r_{\pi 2}] [R_3 \parallel (r_{\pi 3} + (\beta_0 + 1)R_4)] \frac{g_{m3}R_4}{1 + g_{m3}R_4} \approx 3825,1$

c) $R_{ul} = r_{\pi 1} = 25\text{k}\Omega$; $R_{izl} = R_4 \parallel \frac{r_{\pi 3} + R_3}{\beta_0 + 1} = 127\Omega$.

d) $V_{im\max} = 11,1\text{V}$.

4.

$v_i[\text{V}] = 0 = \text{const}$, za $-5\text{V} \leq v_G \leq -4.3\text{V}$ (IOP1 - neg. zasićenje, IOP2 - poz. zasićenje, D-ON);

$v_i[\text{V}] = v_G[\text{V}] + 4.3$, za $-4.3\text{V} \leq v_G \leq -3.05\text{V}$ (IOP1 - lin. režim, IOP2 - poz. zasićenje, D-ON);

$v_i[\text{V}] = \frac{1}{3}v_G[\text{V}] + 2.267$, za $-3.05\text{V} \leq v_G \leq 1.36\text{V}$ (IOP1 - lin. režim, IOP2 - lin. režim, D-ON);

$v_i[\text{V}] = 2v_G[\text{V}]$, za $1.36\text{V} \leq v_G \leq 1.875\text{V}$ (IOP1 - lin. režim, IOP2 - lin. režim, D-OFF);

$v_i[\text{V}] = 2v_G[\text{V}]$, za $1.875\text{V} \leq v_G \leq 2.5\text{V}$ (IOP1 - lin. režim, IOP2 - neg. zasićenje, D-OFF);

$v_i[\text{V}] = 5\text{V} = \text{const}$, za $2.5\text{V} \leq v_G \leq 5\text{V}$ (IOP1 - poz. zasićenje, IOP2 - neg. zasićenje, D-OFF).

IOP1 - donji IOP

IOP2 - gornji IOP