ISPIT IZ OSNOVA ELEKTRONIKE **12.02.2015.**

ODSEK ZA TELEKOMUNIKACIJE I INFORMACIONE TEHNOLOGIJE
ODSEK ZA SIGNALE I SISTEME
ODSEK ZA FIZIČKU ELEKTRONIKU

REŠENJA ZADATAKA

1. a) $R_{E1} = 4{,}4\text{k}\Omega$; $R_{E3} = 5\text{k}\Omega$; $R_{C2} = 5{,}6\text{k}\Omega$; $R_{C1} = 1{,}12\text{k}\Omega$ $R_{E2} = 521{,}7\Omega$.

b) $R_i = R_{E3} \parallel \dfrac{r_{\pi 3} + R_{C2}}{\beta_0 + 1} = R_{E3} \parallel \dfrac{1}{g_{m3}} \approx 24.88\Omega$.

c) $v_{I(\min)} = V_{EE} = -5\text{V}$; (Q_3 na granici zakočenja)
$v_{I(\max)} = V_{CC} - I_{C2}R_{E2} - V_{ECS} - V_{BE} = 3.68\text{V}$; (Q_2 na granici zasićenja)
$V_I = 0$;
$V_{im\max} = \min\{v_{I(\max)} - V_I ; V_I - v_{I(\min)}\} = 3.68\text{V}$

4.
$v_I[\text{V}] = V_{EE} = -12\text{V} = const$, za $-12\text{V} \le v_G \le -4{,}5\text{V}$ (IOP- neg. zas., D_1-ON, D_2-OFF);
$v_I[\text{V}] = 2v_G[\text{V}] - 3$, za $-4{,}5\text{V} \le v_G \le -1{,}5\text{V}$ (IOP- lin. režim, D_1-ON, D_2-OFF);
$v_I[\text{V}] = 4v_G[\text{V}]$, za $-1{,}5\text{V} \le v_G \le 1{,}5\text{V}$ (IOP- lin. režim, D_1-OFF, D_2-OFF);
$v_I[\text{V}] = 2v_G[\text{V}] + 3$, za $1{,}5\text{V} \le v_G \le 4{,}5\text{V}$ (IOP- lin. režim, D_1-OFF, D_2-ON);
$v_I[\text{V}] = V_{CC} = 12\text{V} = const$, za $4{,}5\text{V} \le v_G \le 12\text{V}$ (IOP- poz. zas, D_1-OFF, D_2-ON).