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

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)
$$a = \frac{v_i}{v_g} = \left[-g_{m1}(R_2 \parallel r_{\pi 2}) \right] \cdot \left[-g_{m2}(R_3 \parallel (r_{\pi 3} + (\beta_0 + 1)R_4)) \right] \cdot \frac{g_{m3}R_4}{1 + g_{m3}R_4} \approx 3825.1.$$

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

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 $v_I[\mathrm{V}] = -0.75i_G[\mathrm{mA}] + 0.9 \;,\; \mathrm{za} \; -5\mathrm{mA} \leq i_G \leq -0.4\mathrm{mA} \; \; (\mathrm{IOP\text{-}lin.} \; \mathrm{re} \check{\mathrm{zim}}, \; \mathrm{D\text{-}ON}, \; \mathrm{T\text{-}DAR});$

 $v_I[V] = -3i_G[mA]$, za $-0.4mA \le i_G \le 4mA$ (IOP-lin. režim, D-OFF, T-OFF);

 $v_I[V] = -12V = const$, za 4mA $\leq i_G \leq 5$ mA (IOP-neg. zasićenje, D-OFF, T-OFF).