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

## REŠENJA ZADATAKA

**1.** a) 
$$I_{C1} = 1 \text{mA}$$
,  $I_{C2} = 1 \text{mA}$ ,  $R_1 = 1.6 \text{k}\Omega$ ,  $R_2 = 4.4 \text{k}\Omega$ .

b) 
$$a_v = \frac{v_p}{v_g} = (-g_{m1}(R_1 \parallel r_{\pi 2})) \cdot (-g_{m2}(R_4 \parallel R_P)) = 5203$$

c) 
$$R_{ul} = r_{\pi 1} = 2.5 \text{k}\Omega$$
  $R_{izl} = R_4 = 5 \text{k}\Omega$ 

d) 
$$v_{P \max} = 3.8 \text{V}$$
 ( $Q_2$  na granici zasićenja)  $v_{P \min} = -3.33 \text{V}$  ( $Q_2$  na granici zakočenja)  $V_P = 0$   $V_{p \max} = \min \{ v_{P \max} - V_P, V_P - v_{P \min} \} = 3.33 \text{V}$ 

## 4.

$$\begin{split} &v_{I}[V] = V_{D} + \left| V_{BE} \right| = 1.4 \text{V} = const \;, \; \text{za} \; -3 \text{V} \leq v_{G} \leq -1.4 \text{V} \; \; \text{(IOP- lin. režim,} \; D_{1}\text{-OFF,} \; Q_{1}\text{-OFF,} \; D_{2}\text{-ON,} \\ &Q_{2}\text{-DAR}); \\ &v_{I}[V] = -v_{G}[V] \;, \; \text{za} \; -1.4 \text{V} \leq v_{G} \leq 1.4 \text{V} \; \; \text{(IOP-lin. režim,} \; D_{1}\text{-OFF,} \; Q_{1}\text{-OFF,} \; D_{2}\text{-OFF,} \; Q_{2}\text{-OFF)}; \\ &v_{I}[V] = -V_{D} - \left| V_{BE} \right| = -1.4 \text{V} = const \;, \; \text{za} \; \; 1.4 \text{V} \leq v_{G} \leq 3 \text{V} \; \; \text{(IOP- lin. režim,} \; D_{1}\text{-ON,} \; Q_{1}\text{-DAR,} \; D_{2}\text{-OFF,} \\ &Q_{2}\text{-OFF)}. \end{split}$$