

REŠENJA ZADATAKA

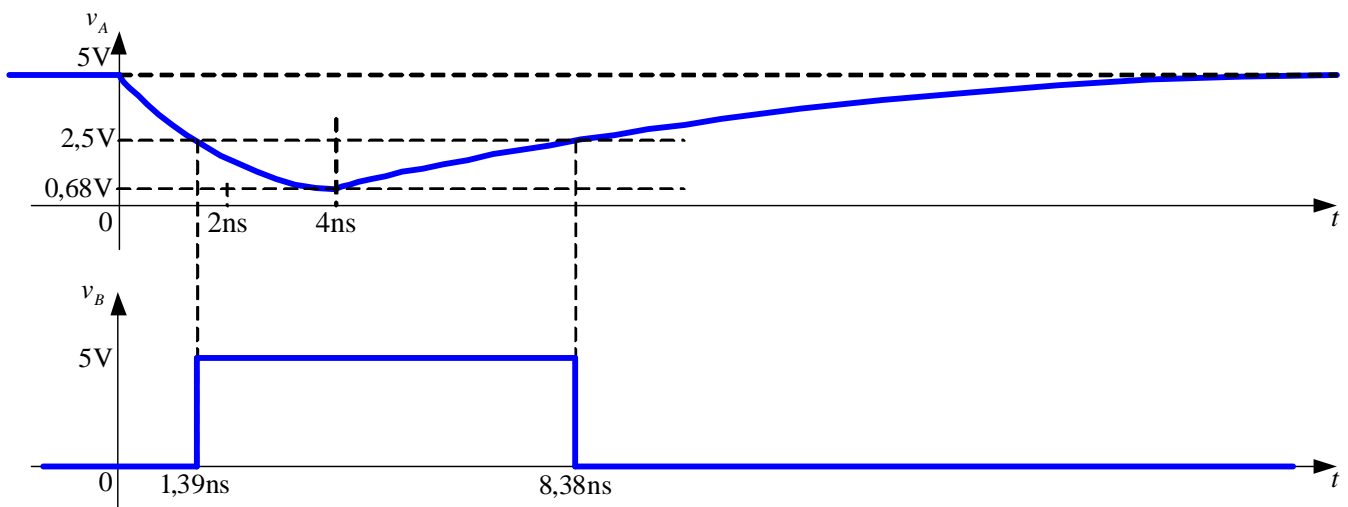
1. KOLOKVIJUM

2. a)

$$v_A(t) = \begin{cases} 5V, & t < 0 \\ 5V \cdot e^{-5 \cdot 10^8 \cdot t}, & 0 \leq t \leq 4ns \\ 5V - 4,32V \cdot e^{-1,25 \cdot 10^8 \cdot (t-4ns)}, & t \geq 4ns \end{cases}$$

b) $v_A(t_1) = 2,5V$ (za $0 < t < 4ns$) $\Rightarrow t_1 = 1,39ns$

$v_A(t_2) = 2,5V$ (za $t > 4ns$) $\Rightarrow t_2 = 8,38ns$



$$v_B(t) = \begin{cases} 0, & t < 1,39ns \\ 5V, & 1,39ns \leq t \leq 8,38ns \\ 0, & t > 8,38ns \end{cases}$$

2. KOLOKVIJUM

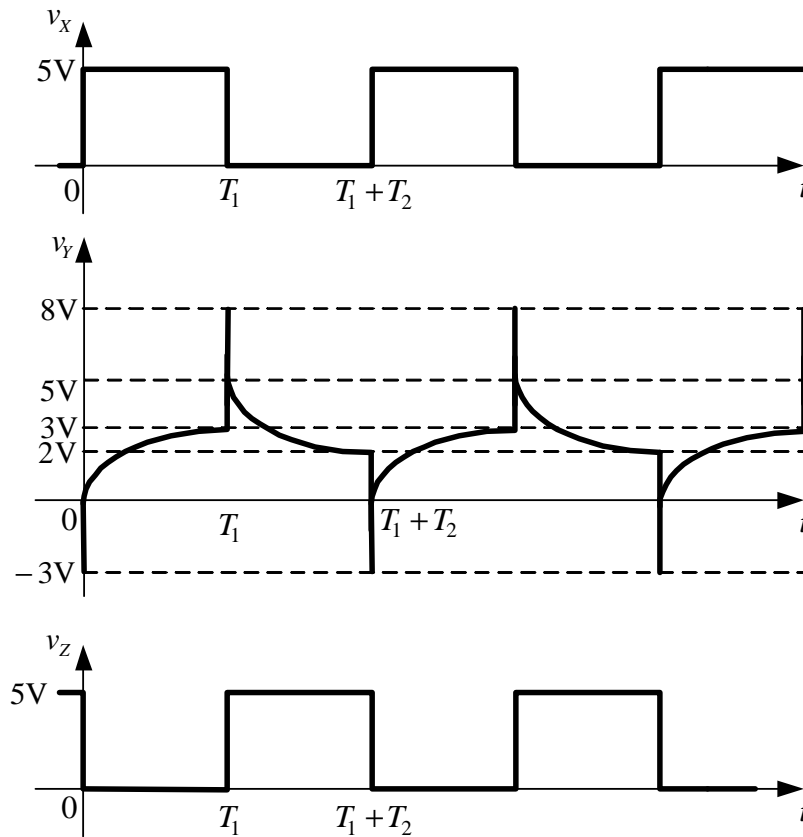
2.

$v_Y(t) = 5V - 5V \cdot e^{-2000t}$, za $0 < t < T_1$

$v_Y(t) = 5V \cdot e^{-2000(t-T_1)}$, za $T_1 < t < T_1 + T_2$

$$T_1 = T_2 = 458,14\mu\text{s}$$

$$f = \frac{1}{T_1 + T_2} = 1091,4\text{Hz}$$



3. KOLOKVIJUM

2. a)
$$v_I = -\frac{3}{8} \cdot (8\overline{Q_3} + 4\overline{Q_2} + 2\overline{Q_1} + \overline{Q_0}) + \frac{45}{8}.$$

b) Analogni izlazni napon D/A konvertora je minimalan za $Q_3Q_2Q_1Q_0 = 0000$ i iznosi $v_{I\min} = 0$.

c) Analogni izlazni napon D/A konvertora je maksimalan za $Q_3Q_2Q_1Q_0 = 1111$ i iznosi $v_{I\max} = 5.625\text{V}$.