

Rešenja:**Zadatak 1**

$$\text{a) } i(t) = \frac{dq(t)}{dt} = \frac{dC(t)}{dt} u(t) + \frac{du(t)}{dt} C(t)$$

$$i(t) = \begin{cases} \frac{2CU}{T^2} t; & 0 \leq t \leq T \\ \frac{CU}{T}; & T \leq t \end{cases}$$

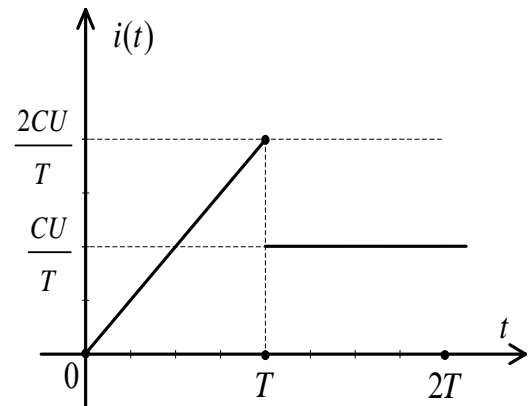
$$\text{b) } W_c(T^-) = \frac{1}{2} C(T^-) u(T^-) = \frac{1}{2} C(U)^2 = \frac{CU^2}{2}$$

$$W_c(2T) = \frac{1}{2} C(2T) u(2T) = \frac{1}{2} C(2U)^2 = 2CU^2$$

$$\text{c) } a(T^+, 2T) = W_c(2T) - W_c(T^+) - a_m(T^+, 2T);$$

$$W_c(T^+) = 0, a_m(0^+, T) = 0,$$

$$a(T^+, 2T) = W_c(2T) - W_c(T^+) = \frac{3}{2} CU^2$$

**Zadatak 2**1) Oblast: ZD se ponaša kao baterija $-V_Z$

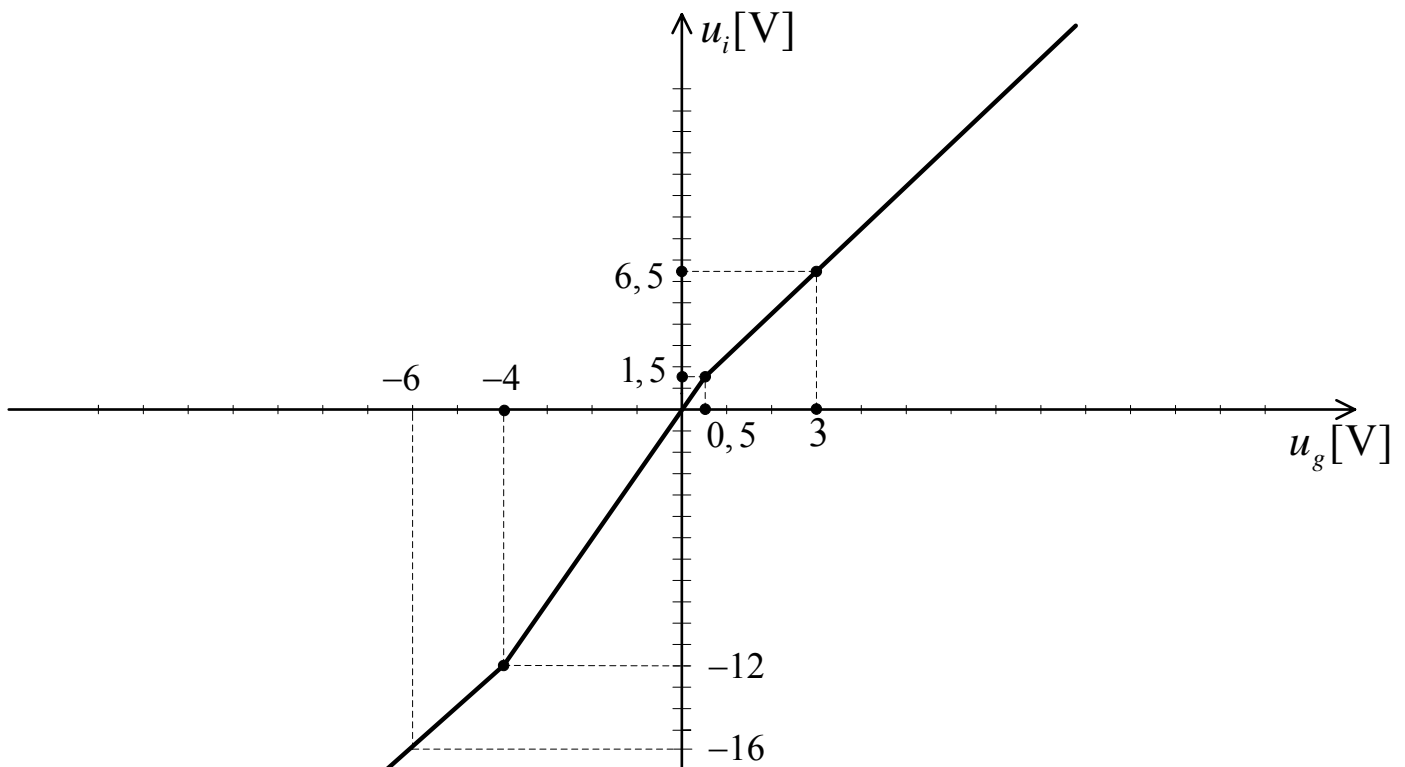
$$u_i = 2u_g - \frac{V_Z}{2} = 2u_g - 4V, u_g \in (-\infty, -4V];$$

2) Oblast: ZD se ponaša kao otvorena veza

$$u_i = 3u_g, u_g \in [-\frac{V_Z}{2}, \frac{V_D}{2}], \text{ tj. } u_g \in [-4, 0.5]$$

3) Oblast: ZD se ponaša kao baterija V_Z

$$\text{a) } u_i = 2u_g + \frac{V_D}{2}, u_g \in [\frac{V_D}{2}, +\infty);$$

**Zadatak 3** Pogledati zadatak broj 12 u zbirci 1. ili vežbe iz TEK kod D.Dujković – a.