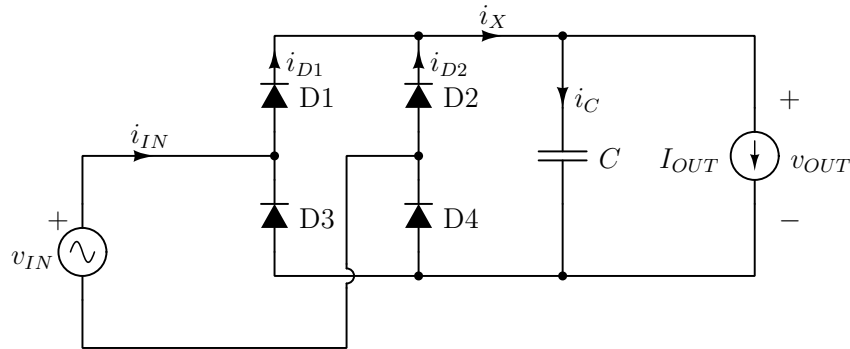


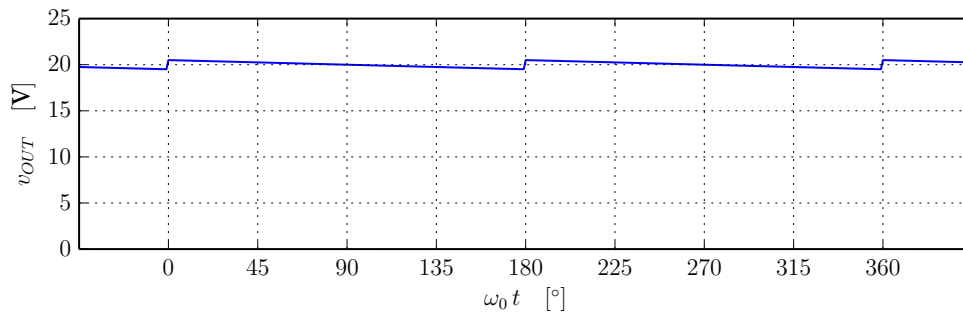
3. Na slici 3 je prikazan ispravljač sa Grecovim spojem kod koga je $v_{IN} = 22.5 V \cos(\omega_0 t)$, $f_0 = 50 \text{ Hz}$, $I_{OUT} = 1 \text{ A}$, $C = 10 \text{ mF}$, diode su sa $V_D = 1 \text{ V}$. U analizi koristiti aproksimaciju malog ugla provođenja.

- a) [2] Odrediti vremenski dijagram izlaznog napona v_{OUT} i njegovu srednju vrednost V_{OUT} .
- b) [5] Odrediti vremenske dijagrame struja i_X , i_C , i_{D1} , i_{D2} i i_{IN} .
- c) [2] Odrediti srednje snage disipacije na diodama P_{D1} , P_{D2} , P_{D3} i P_{D4} .
- d) [1] Odrediti koeficijent korisnog dejstva.



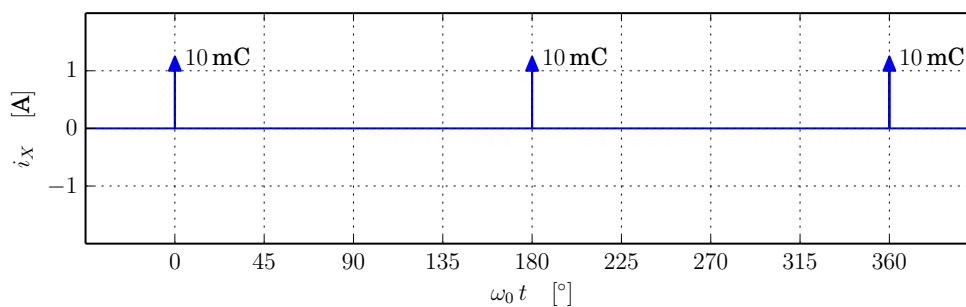
Slika 3

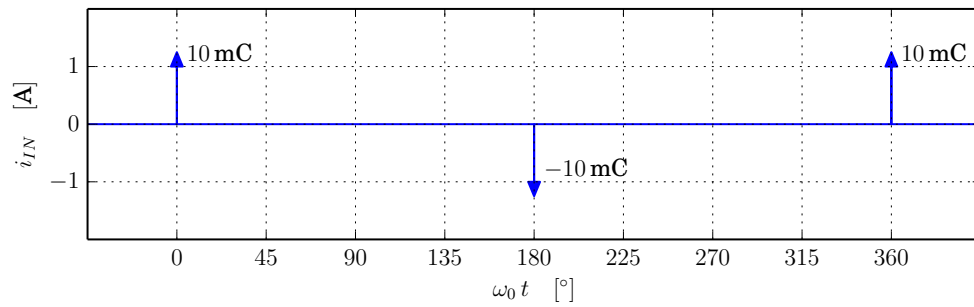
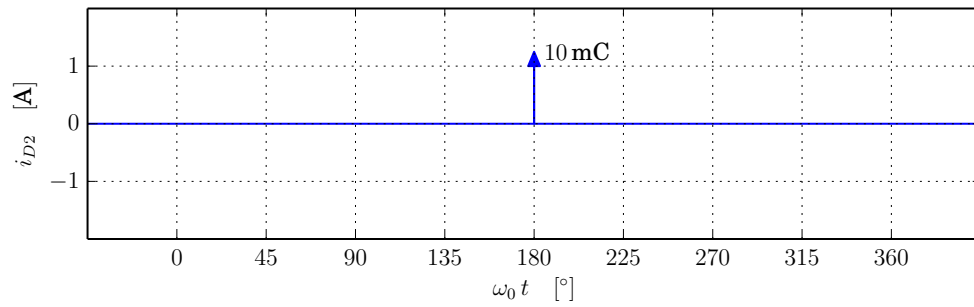
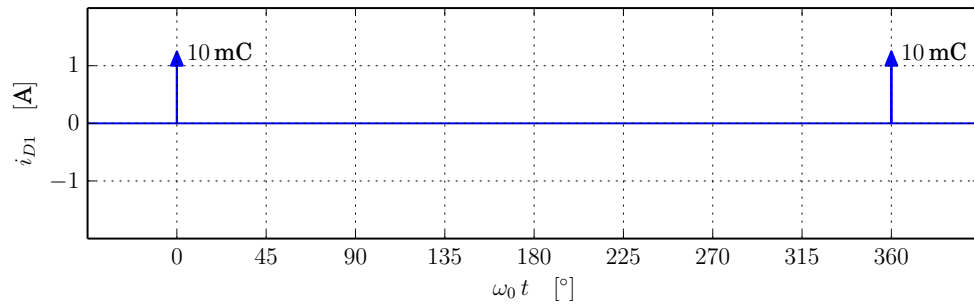
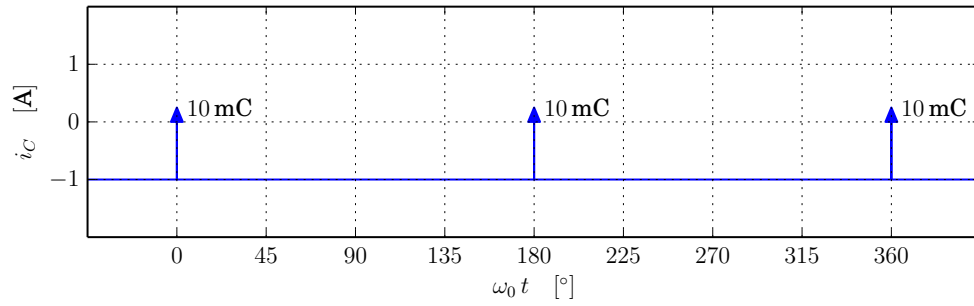
a) [2]



$$V_{OUT} = V_m - 2V_D - \frac{I_{OUT}}{4f_0C} = 20 \text{ V}$$

b) [5]





c) [2]

$$P_{D1} = P_{D2} = P_{D3} = P_{D4} = \frac{1}{2} I_{OUT} V_D = 0.5 \text{ W}$$

d) [1]

$$P_{OUT} = V_{OUT} I_{OUT} = 20 \text{ W}$$

$$P_D = P_{D1} + P_{D2} + P_{D3} + P_{D4} = 2 \text{ W}$$

$$\eta = \frac{P_{OUT}}{P_{OUT} + P_D} = \frac{20 \text{ W}}{22 \text{ W}} = \frac{10}{11} \approx 90.91\%$$