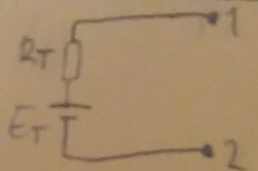
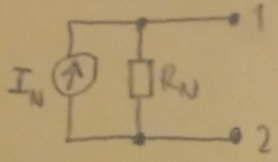
Theveninov nadomjesni izvor



$R_T = 111.85\,\Omega$

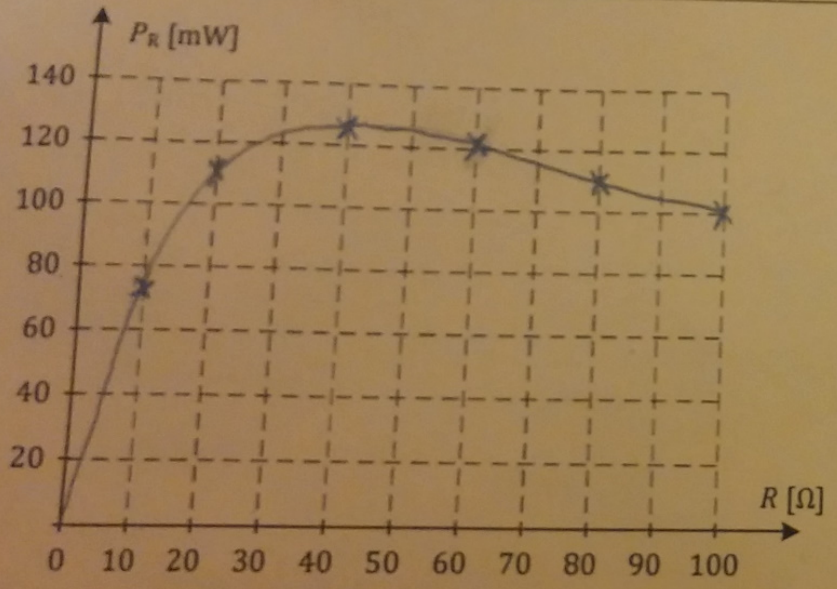
$E_T = 4.40\,V$ ARITMETIČKA SREDINA MJERENJA

Nortonov nadomjesni izvor

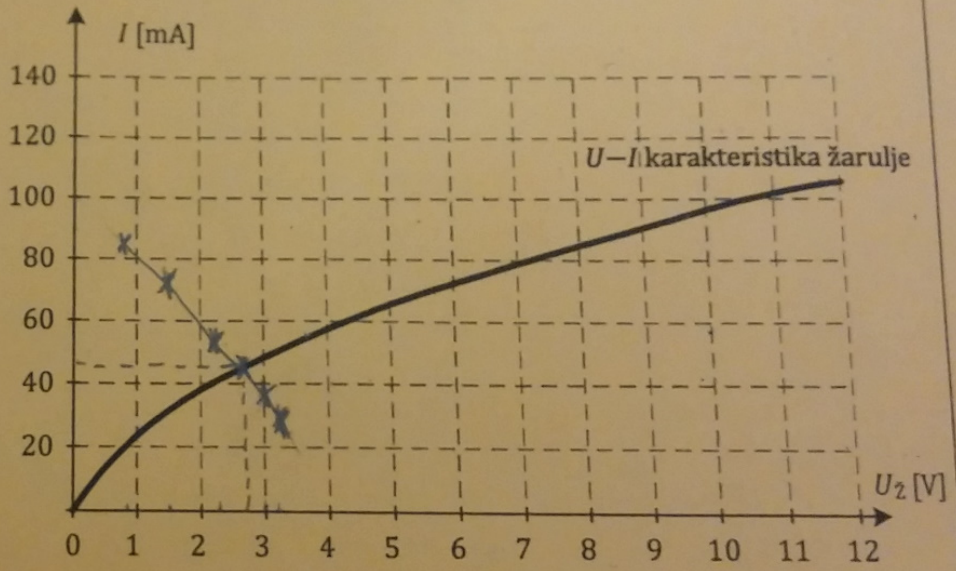


$R_N = 111.85\,\Omega$

$I_N = 33.9\,mA$



Slika A (graf P_R)



Slika B (radna točka Q)

Odgovori na pitanja:

$I_1 = 0.06A \quad I_2 = \frac{U_2}{R_3+R_4}$

$U_{12} = I_2 R_3 + I_1 R_2$

$0 = \frac{U_2}{R_3+R_4} R_3 + 0.06 R_2$

$U_2 = \frac{-0.06 R_2 (R_3+R_4)}{R_3}$

$U_2 = -27\,V$

1. $U_2 =$ -27 V

2. $R =$ 3924.12 Ω i $R =$ 6.24 Ω

3. $U_R/U_{Th} =$ 0.5 ($R_T = R$)

$P = I_2^2 R = \frac{U_T^2}{(R+R_T)^2} \cdot R = \frac{U_T^2}{R^2+2RR_T+R_T^2} \cdot R$

$PR^2 + 2PRR_T + PR_T^2 = U_T^2 R$

$PR^2 + R(2PR_T - U_T^2) + PR_T^2 = 0$

$a \quad b$

$R_1 = 3924.12\,\Omega \quad R_2 = 6.24\,\Omega$

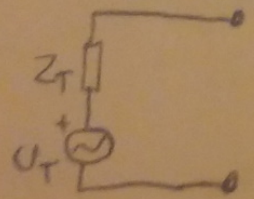
3. U_R/U_{Th} = 0,5 (R_T = R)

R_1 = 3924.72Ω R_2 = 6.24Ω

POKUS 2. THEVENINOV I NORTONOV TEOREM U IZMJENIČNOJ MREŽI

Popis pribora i opreme: AVM, DMM, DIGITALNI OSCILOSKOP, IZMJENIČNI IZVOR (2V, R (1x470Ω, 1x100Ω), C (1x4.7μF), PANEZ ZA SPAJANJE, VODOVI

Theveninov nadomjesni izvor

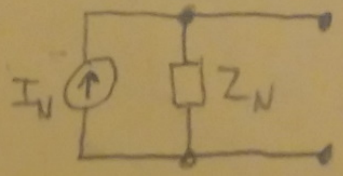


Z_T = 469.96∠-25° Ω

U_T = 10.48 V

(Z_T = 425.33 - 198.61 j) Ω

Nortonov nadomjesni izvor



Z_N = 469.96∠-25 Ω

I_N = 22.3 mA

Odgovori na pitanja: $R = \sqrt{R_T^2 + X_T^2}$

1. R = 469.96 Ω

2. I = 11.4 mA = $\left(\frac{U_T}{Z_T + R}\right)$

3. $P_{R\,maks}$ = 61.1 mW I^2R

4. uvjet za maksimalnu snagu: $\Im\{Z_{ulaz}\} = 0$ ($Z_T = Z^*$)