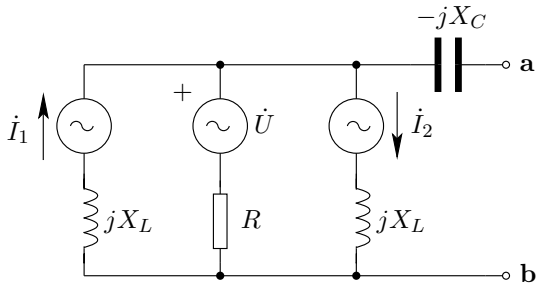
(Ime i prezime) (Matični broj) (Grupa) 26. siječnja 2015. Inačica: **A**

1. (3b) Odredite elemente nadomjesnog Nortonovog spoja sa priključnica a i b ako je $\dot{U} = 10\angle{+30^0}\,\mathrm{V}$, $\dot{I}_1 = 1\angle{+45^0}\,\mathrm{A}$, $\dot{I}_2 = 1\angle{-45^0}\,\mathrm{A}$ i $X_L = X_C = R = 10\,\Omega$.

A) $\underline{Z}_N = 10 - j10\,\Omega$, $\dot{I}_N = -1.707 + j2.707\,\mathrm{A}$
B) $\underline{Z}_N = 10 - j10\,\Omega$, $\dot{I}_N = -0.524 + j1.390\,\mathrm{A}$
C) $\underline{Z}_N = 5 - j5\,\Omega$, $\dot{I}_N = -1 + j2\,\mathrm{A}$
D) $\underline{Z}_N = -6 + j2\,\Omega$, $\dot{I}_N = -2.707 - j1.707\,\mathrm{A}$
E) $\underline{Z}_N = 10 - j10\,\Omega$, $\dot{I}_N = \infty\,\mathrm{A}$

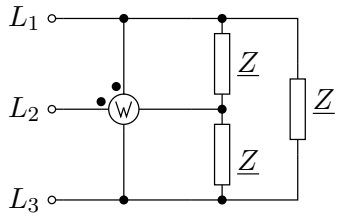


2. (2b) Serijski su spojeni otpornik $R = 5\Omega$ i kapacitet $X_C = 15\Omega$. Ako je napon na otporniku jednak $U_R = 31.623\mathrm{V}$, odredite radnu i jalovu snagu spoja.

A) $P = 200\,\mathrm{W}, Q = -600\,\mathrm{VAr}$ B) $P = 200\,\mathrm{W}, Q = 600\,\mathrm{VAr}$ C) $P = 600\,\mathrm{W}, Q = -200\,\mathrm{VAr}$
D) $P = 600\,\mathrm{W}, Q = 200\,\mathrm{VAr}$ E) $P = 0\,\mathrm{W}, Q = 0\,\mathrm{VAr}$

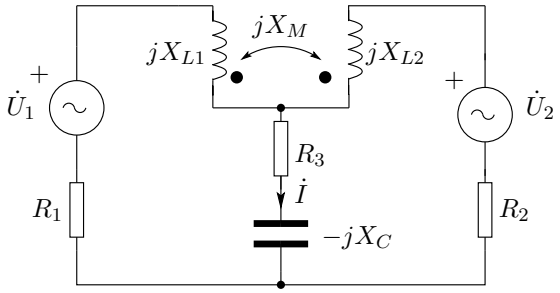
3. (3b) Na simetrični trofazni izvor faznog napona $U_f = 230\,\mathrm{V}$ priključeno je trošilo prema slici. Odredite pokazivanje watmetra ako je $\underline{Z} = 60\angle{0^0}\,\Omega$.

A) $P_W = 0\,\mathrm{W}$
B) $P_W = 44.08\,\mathrm{W}$
C) $P_W = 133.33\,\mathrm{W}$
D) $P_W = 1527.1\,\mathrm{W}$
E) $P_W = 4618.8\,\mathrm{W}$



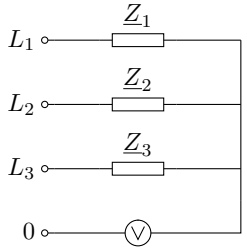
4. (3b) Odredite struju $\dot{I}$ u mreži prema slici ako je $R_1 = R_2 = R_3 = 5\Omega$, $X_{L1} = X_{L2} = X_M = X_C = 5\Omega$ i $\dot{U}_1 = \dot{U}_2 = 30\angle{0^0}\mathrm{V}$.

A) $\dot{I} = 4\angle{0^0}\,\mathrm{A}$
B) $\dot{I} = 4\angle{90^0}\,\mathrm{A}$
C) $\dot{I} = 2\angle{90^0}\,\mathrm{A}$
D) $\dot{I} = 2\angle{0^0}\,\mathrm{A}$
E) $\dot{I} = 2\angle{-90^0}\,\mathrm{A}$



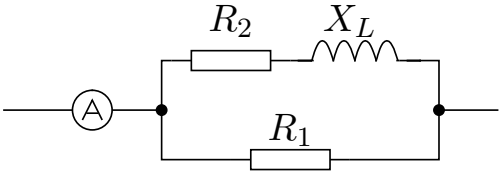
5. (3b) Na simetrični trofazni izvor linijskog napona $U_l = 400\,\mathrm{V}$ spojeno je trošilo prema slici. Odredite pokazivanje voltmetra ako je $\underline{Z}_1 = 60\angle{0^0}\,\Omega$, $\underline{Z}_2 = 60\angle{-90^0}\,\Omega$ i $\underline{Z}_3 = 60\angle{0^0}\,\Omega$.

A) $U_V = 346.41\,\mathrm{V}$
B) $U_V = 230.94\,\mathrm{V}$
C) $U_V = 146.1\,\mathrm{V}$
D) $U_V = 115.47\,\mathrm{V}$
E) $U_V = 0\,\mathrm{V}$



6. (3b) Odredite pokazivanje ampermetra u mreži prema slici ako je ukupna radna snaga u krugu jednaka $P_{uk} = 1100\text{W}$, te $R_1 = 10\Omega$, $R_2 = 6\Omega$ i $X_L = 8\Omega$.

A) $I_A = 14.03\,\text{A}$
B) $I_A = 14.83\,\text{A}$
C) $I_A = 19.24\,\text{A}$
D) $I_A = 20.98\,\text{A}$
E) $I_A = 25.69\,\text{A}$

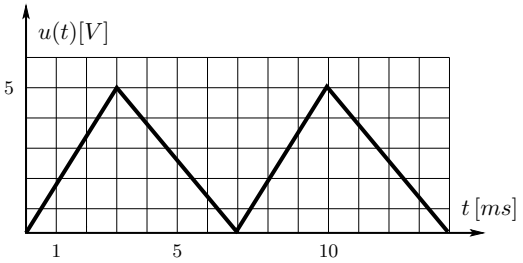


7. (2b) Na serijski spoj $R = 5\,\Omega$, $C = 50\,\mu F$ i $L = 5\,\text{mH}$, priključen je složeni valni oblik napona prikazan funkcijom $u(t) = 150\sin 1000t + 100\sin 2000t$ V. Odredite srednju snagu na otporu R.

A) P_R =325 W B) P_R =1374 W C) P_R =1225 W D) P_R =11260 W E) P_R =2450 W

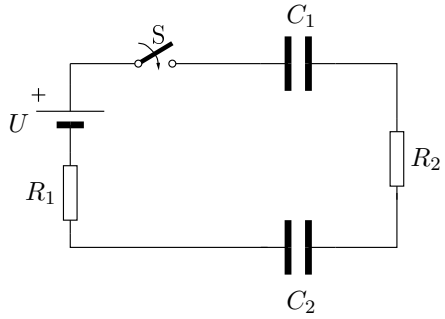
8. (2b) Odredite faktor oblika $\xi = U_{eff}/U_{sr}$ za valni oblik napona prema slici.

A) ξ =0.866
B) ξ =0.5
C) ξ =1.154
D) ξ =1.414
E) ξ =2



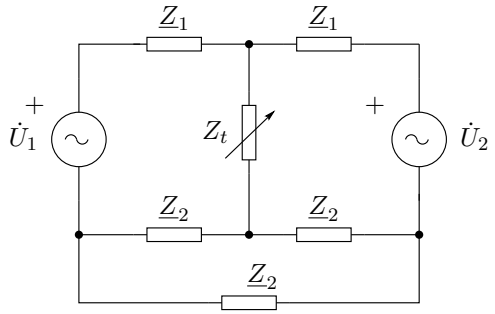
9. (2b) U trenutku $t = 0$ zatvara se sklopka S. Odredite napon na kondenzatoru C_2 u trenutku $t_1 = 20\,\text{ms}$ ako je $U = 12\,\text{V}$, $R_1 = 90\,\Omega$, $R_2 = 910\,\Omega$, $C_1 = 30\,\mu F$ i $C_2 = 60\,\mu F$.

A) U_{C2} =4 V
B) U_{C2} =7.585 V
C) U_{C2} =2.107 V
D) U_{C2} =2.528 V
E) U_{C2} =5.057 V



10. (3b) Odredite maksimalnu snagu P_{max} koja se može dobiti na promjenjivoj impedanciji $\underline{Z}_t$, ako je $\underline{Z}_1 = 10\text{+j}10\,\Omega$, $\underline{Z}_2 = 30\text{+j}30\,\Omega$, $\dot{U}_1 = 10\,\underline{/0^0}\,\text{V}$ i $\dot{U}_2 = 10\,\underline{/0^0}\,\text{V}$.

A) $P_{max} = 0\,\text{W}$
B) $P_{max} = 0.75\,\text{W}$
C) $P_{max} = 2.5\,\text{W}$
D) $P_{max} = 1.25\,\text{W}$
E) $P_{max} = 5\,\text{W}$



Odgovori: 1.B, 2.A, 3.A, 4.A, 5.C, 6.B, 7.C, 8.C, 9.D, 10.D