A/B

1. $Q = 30C$ $U = \frac{W}{Q}$
$W = 900J$ $U = \frac{900J}{30C}$
$U = ?$ $U = 30V$

2. $U = 6V$ $U = \frac{W}{Q}$
$W = 3600J$ $6V = \frac{3600J}{Q}$
$Q = ?$ $Q = \frac{3600J}{6V}$
$Q = 600C$

3. $U = 220V$ $U = \frac{W}{Q}$
$Q = 3C$ $220V = \frac{W}{3C}$
$W = ?$ $W = 220V \cdot 3C$
$W = 660J$

4. $U = 4.5V$
$I = 0.3A$
$W = E = 0.0135kJ = 13.5J$
$t = ?$
$W = E = U \cdot I \cdot t$
$13.5J = 4.5V \cdot 0.3A \cdot t$
$t = \frac{13.5J}{4.5V \cdot 0.3A}$
$t = 10s$

5. a $U = 9V$ $U = U_1 + U_2 + U_3$
$U_1 = ?$ $9V = 3U_1 / :3$
$U_2 = ?$ $3V = U_1$
$U_3 = ?$ $U_1 = U_2 = U_3$
$U_1 = 3V$
$U_2 = 3V$
$U_3 = 3V$

b $U = 4,5V + 4,5V = 9V$
$U_1 = ?$
$U_2 = ?$ $U = U_1 = U_2 = U_3$
$U_3 = ?$ $9V = U_1$
$9V = U_2$
$9V = U_3$

c $U = 9V$ $U = U_1 = U_2$ $U = U_3$
$U_1 = ?$ $9V = U_1 + U_2$ $9V = U_3$
$U_2 = ?$ $U_1 = 4,5V$
$U_3 = ?$ $U_2 = 4,5V$

6. a) $U_{AB} = 12V$
b) $U_{AB} = 12V : 3 = 4V$
c) $U_{AB} = 12V$

A/B

1. $t = 2s$
$Q = 4C$
$I = ?$
$I = \frac{Q}{t}$
$I = \frac{4C}{2s}$
$I = 2A$

2. $Q = 1C$
$I = 0,04A$
$t = ?$
$t = \frac{Q}{I}$
$t = \frac{1C}{0,04A}$
$t = 25s$

3. $t = 1min = 60s$
$I = 0,6A$
$Q = ?$
$Q = I \cdot t$
$Q = 0,6A \cdot 60s$
$Q = 36C$

4. $t_1 = 2min = 120s$
$Q_1 = 4800C$
$I_1 = ?$
$I_1 = \frac{Q_1}{t_1}$
$I_1 = \frac{4800C}{120s}$
$I_1 = 40A$

$t_2 = 2s$
$Q_2 = 80C$
$I_2 = ?$
$I_2 = \frac{Q_2}{t_2}$
$I_2 = \frac{80C}{2s}$
$I_2 = 40A$

Struje su jednake.

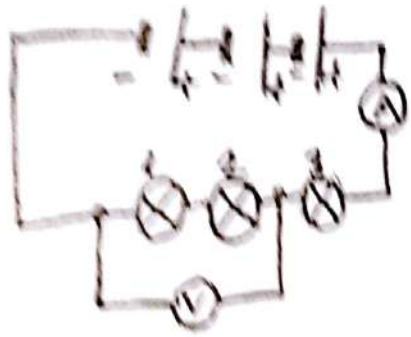
5. $t = 1h = 3600s$
$I = 5A$
$Q = ?$
$Q = I \cdot t$
$Q = 5A \cdot 3600s$
$Q = 18000C$

(1) (a) $I = 0,3A$
(b) $I_2 = I - I_1 = 0,5A - 0,2A = 0,3A$
(c) $I = I_1 + I_2 = 0,1A + 0,3A = 0,4A$
(d) $I_2 = I_3 = 0,3A$

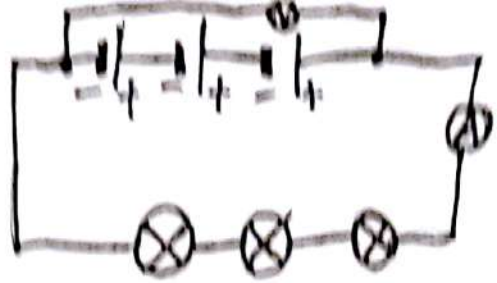
(2) $I = 0,5A$
$t = 1min = 60s$
$I_2 =$
$Q_2 = ?$

$I_2 = I : 2 = 0,5A : 2 = 0,25A$
$Q_2 = I_2 \cdot t$
$Q_2 = 0,25A \cdot 60s$
$Q_2 = 15C$

⑦ a)



b)



⑧ a) $U = 9\,V$

$U_1 = 3\,V$

$U_2 = ?$

$U = U_1 + U_2$

$U_2 = U - U_1$

$U_2 = 9\,V - 3\,V$

$U_2 = 3\,V$

b) $U = 9\,V$

$Q = 1\,C$

$W = ?$

$W = U \cdot Q$

$W = 9\,V \cdot 1\,C$

$W = 9\,J$

c) $U_1 = 3\,V$

$Q = 1\,C$

$W = ?$

$W = U_1 \cdot Q$

$W = 3\,V \cdot 1\,C$

$W = 3\,J$

⑨ $I = 60\,A$

$U = 230\,V$

$P = ?$

$P = U \cdot I$

$P = 230\,V \cdot 60\,A$

$P = 13800\,W$

⑩ $I = 5{,}5\,A$

$U = 220\,V$

$t = 8\,h = 8 \cdot 3600\,s = 28800\,s$

$\Delta E = W = ?$

$\Delta E = U \cdot I \cdot t$

$\Delta E = 220\,V \cdot 5{,}5\,A \cdot 28800\,s$

$\Delta E = 34848000\,J$

(11.) $P = 1,4\ kW = 1400\ W$

$t = 1\ h = 3600\ s$

$W = ?$

$W = P \cdot t$

$W = 1400\ W \cdot 3600\ s$

$W = 5\,040\,000\ J$

(12.) $P = 1,2\ kW = 1200\ W$

$U = 220\ V$

$t = 4\ h = 14400\ s$

a) $I = ?$

$P = U \cdot I$

$I = P : U$

$I = 1200 : 220$

$I = 5,46\ A$

b) $\Delta E = ?$

$\Delta E = P \cdot t$

$\Delta E = 1200\ W \cdot 14400\ s$

$\Delta E = 17\,280\,000\ J$

(13) $I = 2,5A$

$P = 275W$

$U = ?$

$U = P : I$

$U = 275W : 2,5A$

$U = 110V$

(14) $P = 500W$

$W = 6kJ = 6000J$

$t = ?$

$P = \frac{W}{t}$

$t = \frac{W}{P}$

$t = \frac{6000J}{500W}$

$t = 12s$

(15) $U = 220V$

$t = 1h = 3600s$

$Q = 900C$

$P = ?$

$I = \frac{Q}{t}$

$I = \frac{900C}{3600s}$

$I = 0,25A$

$P = U \cdot I$

$P = 220V \cdot 0,25A$

$P = 55W$

(16) $t = 14d = 336h$

$P = 100W = 0,1kW$

cijena $1kWh \rightarrow 40lp = 0,4kn$

$\Delta E = W = P \cdot t$

$\Delta E = 0,1kW \cdot 336h$

$\Delta E = 33,6kWh$

ukupna cijena $= 33,6 \cancel{kWh} \cdot 0,4 \frac{kn}{\cancel{kWh}}$

$= 13,44kn$

(17) $R = 2k\Omega = 2000\Omega$

$U = 220V$

$I = ?$

$I = \frac{U}{R}$

$I = \frac{220V}{2000\Omega}$

$I = 0,11A$

(18) $R = 50\Omega$

$I = 0,2A$

$U = ?$

$U = I \cdot R$

$U = 0,2A \cdot 50\Omega$

$U = 10V$

(19) $R = 40\,\Omega$

$I = 25\,mA = 0{,}025\,A$

$U = ?$

$R = \frac{U}{I}$

$40 = \frac{U}{0{,}025}$

$U = R \cdot I$

$U = 40 \cdot 0{,}025$

$U = 1\,V$

(20) $U = 220\,V$

$R = ?$

$I = 2\,A$

$R = \frac{U}{I}$

$R = \frac{220}{2}$

$R = 110\,\Omega$

(21) $Q = ?$

$R = 3\,\Omega$

$t = 2\,min = 120\,s$

$U = 4{,}5\,V$

$R = \frac{U}{I}$

$3 = \frac{4{,}5}{I}$

$I = 4{,}5 : 3$

$I = 1{,}5\,A$

$I = \frac{Q}{t}$

$1{,}5 = \frac{Q}{120}$

$Q = 1{,}5 \cdot 120$

$Q = 180\,C$

(22) $U = 220\,V$

$t = 3\,min = 180\,s$

$Q = 3600\,C$

$R = ?$

$I = \frac{Q}{t}$

$I = \frac{3600}{180}$

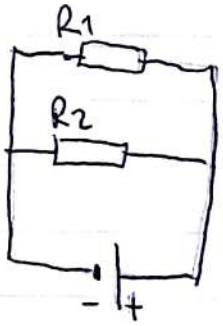
$I = 20\,A$

$R = \frac{U}{I}$

$R = \frac{220}{20}$

$R = 11\,\Omega$

(23)



$R_1 = 2\,\Omega$

$R_2 = 8\,\Omega$

$\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2}$

$\frac{1}{R} = \frac{1}{2\Omega} + \frac{1}{8\Omega}$

$\frac{1}{R} = \frac{4}{8\Omega} + \frac{1}{8\Omega}$

$\frac{1}{R} = \frac{5}{8\Omega}$

$R = \frac{8}{5}\,\Omega$

$R = 1{,}6\,\Omega$

(24) $R_1 = 7\,\Omega$

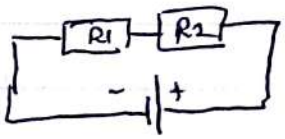
$R_2 = 5\,\Omega$

$R = ?$

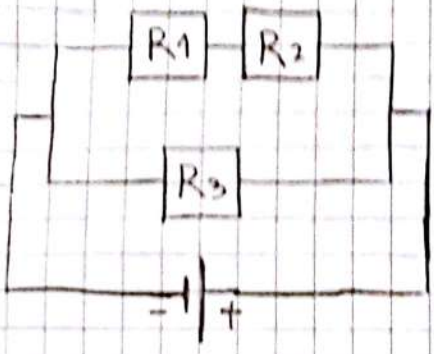
$R = R_1 + R_2$

$R = 7\,\Omega + 5\,\Omega$

$R = 12\,\Omega$



b)



$R_1 = 4\,\Omega$
$R_2 = 4\,\Omega$
$R_3 = 2\,\Omega$

$R_s = R_1 + R_2$
$R_s = 8\,\Omega$

$\frac{1}{R} = \frac{1}{R_s} + \frac{1}{R_3}$
$\frac{1}{R} = \frac{1}{8\Omega} + \frac{1}{2\Omega}$
$\frac{1}{R} = \frac{1}{8\Omega} + \frac{4}{8\Omega}$
$\frac{1}{R} = \frac{5}{8\Omega}$
$R = \frac{8}{5}\,\Omega$ $R = 1.6\,\Omega$

27.

a) $U = 8\,V$
$I = 2\,A$
Struja koja teče strujnim krugom koji je spojen na 8 V iznosi 2 A

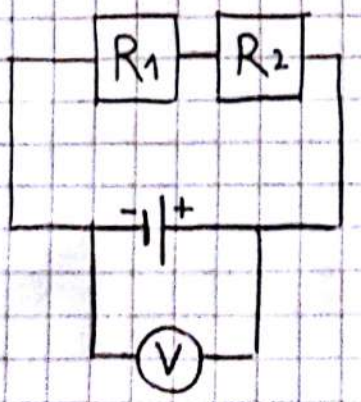
b) $U = 4\,V$
$I = 1\,A$
$R = ?$

$I = \frac{U}{R}$ $R = \frac{U}{I}$ $R = \frac{4\,V}{1\,A}$ $R = 4\,\Omega$

Otpor strujnog kruga je $4\,\Omega$

c) $U = 16\,V$
$I = 4\,A$
Kada bi napon bio 16 V struja bi bila 4 A.

28.



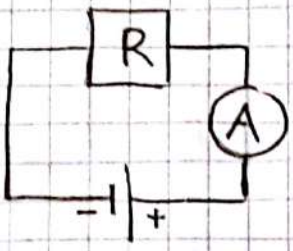
$R_1 = 4\,\Omega$
$R_2 = 5\,\Omega$
$U = 4.5\,V$

$R = R_1 + R_2$
$R = 9\,\Omega$

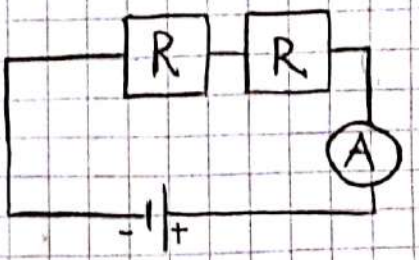
$I = ?$
$I = \frac{U}{R}$
$I = \frac{4.5\,V}{9\,\Omega}$
$I = 0.5\,A$

25.

a)

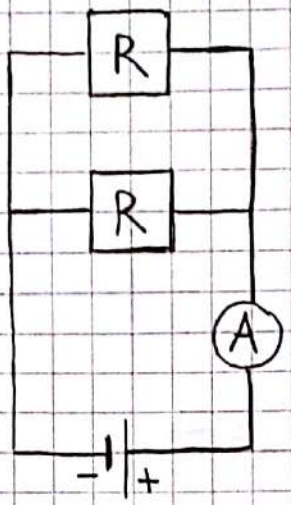


b)



$R = 2\,\Omega$

c)



Kada bi išli računati otpor vidjeli bi da je najveći na slici b), a najmanji na c)

Pošto je struja obrnuto proporcionalna s otporom, najveća struja je na slici c), a najmanja na slici b)

a) $R = R$

$R = 2\,\Omega$

b) $R = R + R$

$R = 2\,\Omega + 2\,\Omega$

$R = 4\,\Omega$

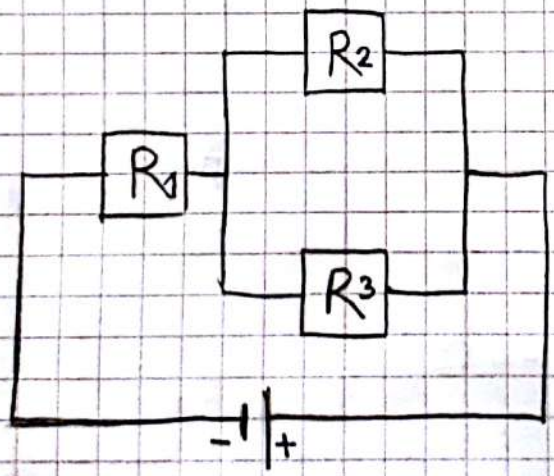
c) $\frac{1}{R} = \frac{1}{R} + \frac{1}{R}$

$\frac{1}{R} = \frac{1}{2} + \frac{1}{2}$

$\frac{1}{R} = \frac{2}{2}\,\Omega \quad R = 1\,\Omega$

26.

a)



$R_1 = 4\,\Omega$

$R_2 = 2\,\Omega$

$R_3 = 2\,\Omega$

$R = R_P + R_1$

$R = 1\,\Omega + 4\,\Omega$

$R = 5\,\Omega$

$\frac{1}{R_P} = \frac{1}{R_2} + \frac{1}{R_3}$

$\frac{1}{R_P} = \frac{1}{2} + \frac{1}{2}$

$\frac{1}{R_P} = \frac{2}{2\,\Omega}$

$R_P = \frac{2\,\Omega}{2} = 1\,\Omega$

23

$R_1 = 25\,\Omega$
$R_2 = 100\,\Omega$
$U = 220\,V$
$I = ?$

$\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2}$

$\frac{1}{R} = \frac{1}{25\,\Omega} + \frac{1}{100\,\Omega}$

$\frac{1}{R} = \frac{4}{100\,\Omega} + \frac{1}{100\,\Omega}$

$\frac{1}{R} = \frac{5}{100\,\Omega}$ (:5 :20)

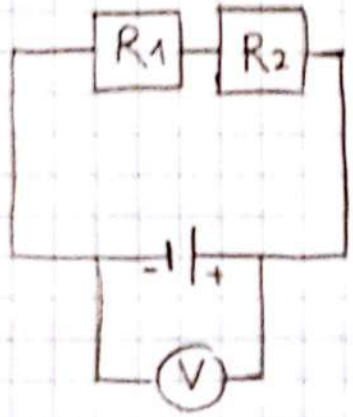
$R = 20\,\Omega$

$I = \frac{U}{R}$

$I = \frac{220\,V}{20\,\Omega}$

$I = 11\,A$

30



$R_1 = 6\,\Omega$
$R_2 = 4\,\Omega$
$U = 20\,V$

a) $R = R_1 + R_2$

$R = 6\,\Omega + 4\,\Omega$

$R = 10\,\Omega$

- Ukupni otpor je $10\,\Omega$

b) $R = 10\,\Omega$
$U = 20\,V$
$I = ?$

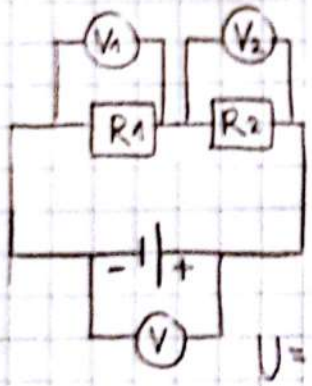
$I = \frac{U}{R}$

$I = \frac{20\,V}{10\,\Omega}$

$I = 2\,A$

- Krugom teče struja od 2A

c)



$U = 20\,V$

$U_1 = ?$
$U_2 = ?$
$I = 2\,A$
$R_1 = 6\,\Omega$
$R_2 = 4\,\Omega$

$U_1 = I \cdot R_1$

$U_1 = 2\,A \cdot 6\,\Omega$

$U_1 = 12\,V$

$U_2 = U - U_1$

$U_2 = 20\,V - 12\,V$

$U_2 = 8\,V$