Nama : Andri Firman Saputra Fisika Dasar II

NIM: 20101402125 Kisi-Kisi UAS

1. Sebuah pengering rambut menarik 13,5 A pada voltase 120V
   a. Berapa resistensinya?
   b. Berapa muatan yg melaluinya dalam 15 menit?

a. diu:
   I = 13,5 A
   V = 120 V

   R = V / I
   R = 120 / 13,5
   R = 8,88 ohm //

b. diu:
   I = 13,5 A
   t = 15 menit = 900 detik

   q = I x t
   q = 13,5 x 900
   q = 12.150 coulomb //

2. Suatu pemanas listrik memiliki hambatan 25 ohm dihubungkan dgn sumber tegangan 250 Volt dan beuerja selama 24 jam, maka:
   a. Arus yg mengalir dalam pemanasan 10 Ampere
   b. Daya pemanas sebesar 2,5 kW
   c. Jika tarif listrik Rp 50,00/kWh, selama waktu tsb diperluuan biaya Rp 3000,00

   manakah pernyataan yg benar?
   semua benar

No
Date

Dik:
R = 25 ohm
V = 250 Volt
t = 24 jam
tarif listrik = Rp 50,00/kwh

a. $I = \frac{W}{Vt}$

$= \frac{60.000}{(250).(24)}$

$= \frac{60.000}{6.000}$

= 10 Ampere //

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

$= \frac{60.000}{24}$

= 2.500 watt

= 2,5 kW //

c. $W = \frac{V^2}{R} \times t$

$= \frac{250^2}{25} \times 24$

= 60.000 watt/jam
= 60 kwh
tarif = 60 kwh x Rp 50,00/kwh
= Rp. 3.000,00 //

No
Date

3. Dua buah lampu bertulisuan 40 W - 60 V dipasang secara seri, kemudian dihubungkan dgn sumber listrik 60 V yg hanya mampu memasok arus listrik 0,5 A. Berapakah besar daya efektif lampu tersebut?

dik:
Jml lampu = 2
rangkaian = seri
P = 40 w
V = 60 V
I = 0,5 A

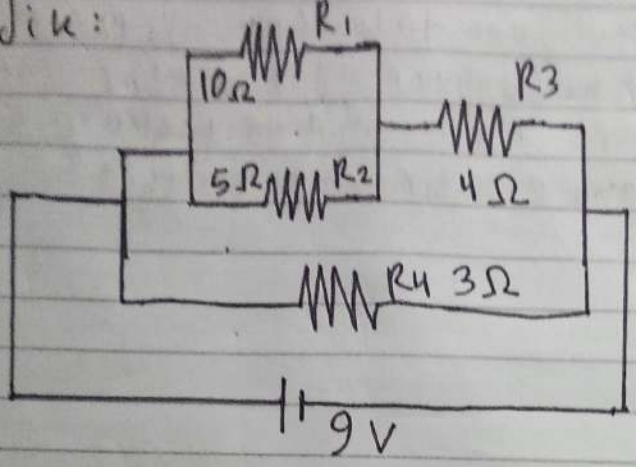
daya efektif?
- Cari hambatan lampu
  $R = V^2 / P$
  $R = 60^2 / 40$
  $R = 3600 / 40$
  $R = 90$ ohm

- Cari total hambatan seri
  $Rs = n . R$
  $Rs = 2 . 90$
  $Rs = 180$ ohm

- Arus pada lampu seri
  $I = V / Rs$
  $I = 60 / 180$
  $I = 0,33334$ A

- Daya efektif
  $P\ ef = V . I$
  $P\ ef = 60 . 0,33$
  $P\ ef = 19,98$ w
  $P\ ef = 20$ watt //

4. Jik:



a. Berapakah arus total yg mengalir dlm rangkaian?

$$\frac{1}{r_1} = \frac{1}{R_1} + \frac{1}{R_2}$$

$$\frac{1}{r_1} = \frac{1}{10} + \frac{1}{5} = \frac{1+2}{10} = \frac{3}{10}$$

$$r_1 = \frac{10}{3} + 4 = \frac{10+12}{3} = \frac{22}{3} \text{ ohm} = 7,334 \text{ ohm}$$

$$\frac{1}{r_2} = \frac{1}{7,334} + \frac{1}{3} = 0,334 \text{ ohm}$$

$$I = \frac{V}{r}$$

$$I = \frac{9}{0,334}$$

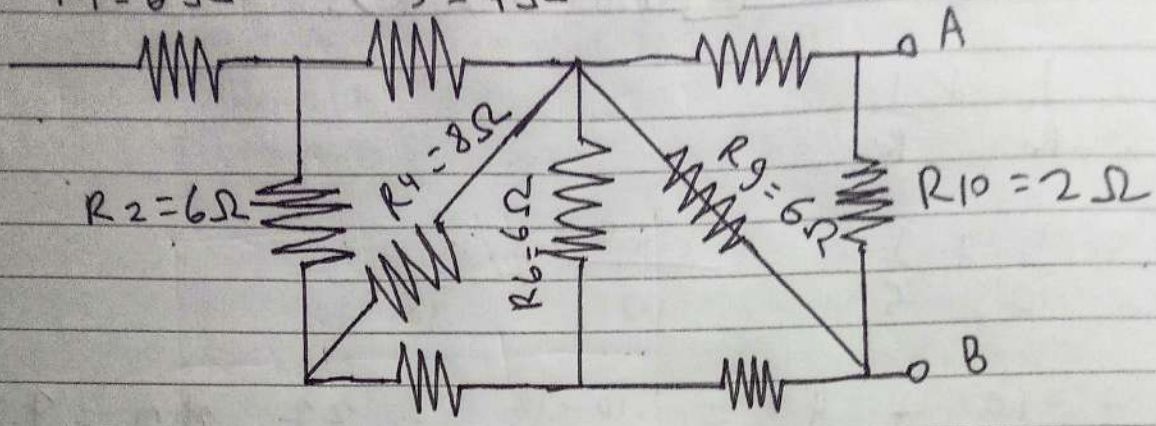
$$I = 26,946 \text{ A} //$$

b. Berapakah arus yg mengalir pada R3?

Arus total = R3
R3 = 26,946 A //

No
Date

5. $R_1 = 6\,\Omega$ $R_3 = 4\,\Omega$ $R8 = 10\,\Omega$

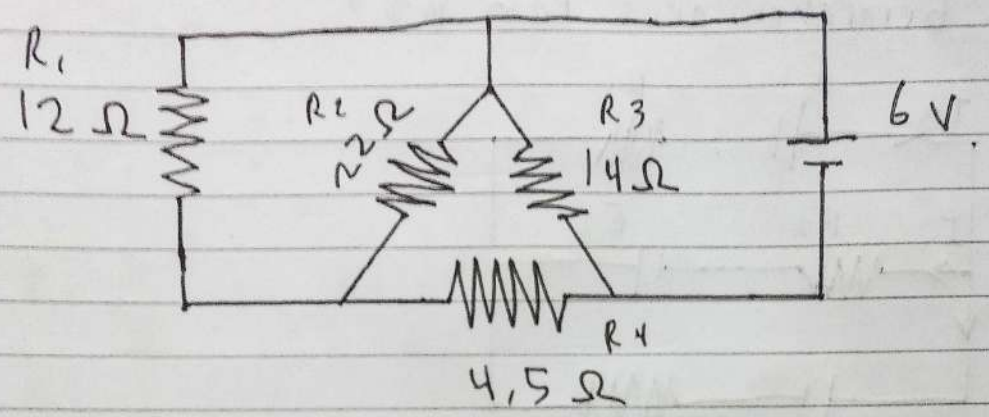


Berapakah hambatan totalpada Titik AB?

$R_s = R_1 + R_2 + R_3 + R_4 + R_5 + R_6 + R_7 + R_9 + R_{10}$
$= 6 + 6 + 4 + 8 + 4 + 6 + 8 + 10 + 6 + 2$
$= 60\,\Omega$ //

No
Date

6. Dik:



a. Berapakah R total ?
b. Berapakah arus pada resistor 14 ohm?
c. Berapakah arus pada resistor 22 ohm?

a. $R_t = R_1 + R_2 + R_3 + R_4$
$= 12 + 22 + 14 + 4,5$
$= 52,5\ \Omega$ //

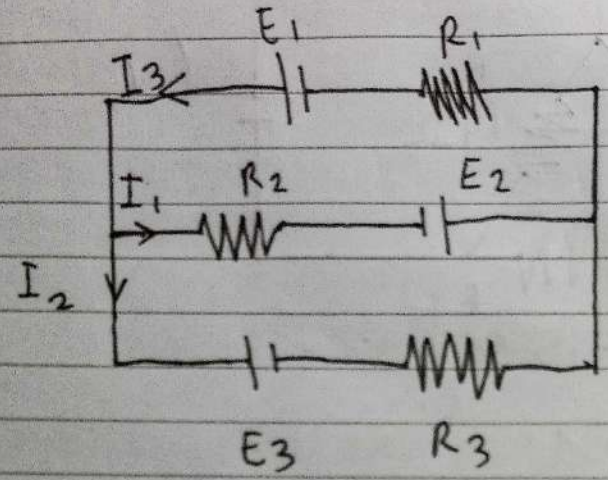
b. $I = \frac{V}{R} = \frac{6}{52,5} = 0,114\ A$

$R_3 = 0,114 \times 14$
$= 1,596\ V$ //

c. $R_2 = 0,114 \times 22$
$= 2,508\ V$ //

No
Date

7. Diket: $E_1 = 16V$, $E_2 = 8V$, $E_3 = 10V$
$R_1 = 12 ohm$, $R_2 = 6 ohm$, $R_3 = 6 ohm$
Dit: Berapakah arus pada R2?



$I_1 = (V-16)/12$
$= \frac{10,4-16}{12}$
$= \frac{-5,6}{12} = -0,4667\ A$ //

$I_2 = (V-8)/6$
$= \frac{10,4-8}{6}$
$= \frac{2,4}{6} = 0,4\ A$

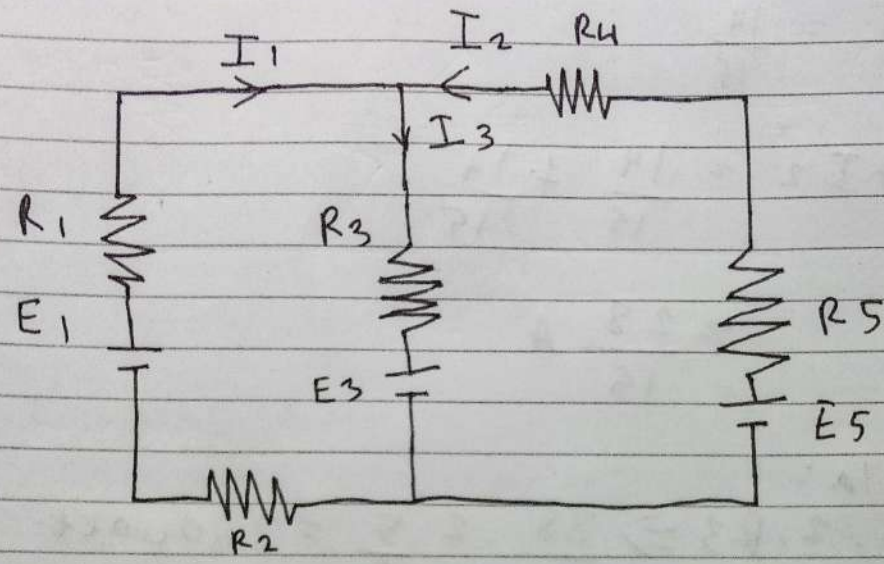
$I_3 = \frac{(V-10)}{6} = \frac{(10,4-10)}{6}$
$= \frac{0,4}{6} = 0,067\ A$

$R_2 = -0,4667\ A$ //

No
Date

8. Diket: $E_1 = 10V$, $E_2 = 10V$, $E_3 = 4V$, $R1 = 5ohm$,
$R_2 = 1ohm$, $R3 = 3\ ohm$, $R4 = 1ohm$, $R5 = 5ohm$.

Dit: Daya pada R3?



(I) $\sum E + \sum I \cdot R = 0$

$E_1 + E_3 + (R_1 + R2) I_1 + R3 . I3 = 0$
$10 + 4 + (5 + 1) I_1 + 3 . I3 = 0$
$14 + 6 I_1 + 3 (I_1 + I_2) = 0$
$14 + 9 I_1 + 3 I_2 = 0$
$9 I_1 + 3 I_2 = 14$

(II) $E_2 + E3 + (R4 + R5) I_2 + R3 . I_3 = 0$
$10 + 4 + (1 + 5) I_2 + 3 . I_3 = 0$
$14 + 9 I_2 - 3 I_1 = 0$ | $9 I_1 + 3 I_2 = 14$ | $\times -3$ |
$-3 I_1 + 9 I_2 = -14$ | $-3 I_1 + 9 I_2 = 14$ | $\times 1$ |

$-27 I_1 + 9 I_2 = 42$
$-27 I_1 + 81 I_2 = 126$ $-$
$-90 I_2 = -84$

$I_2 = \frac{-84}{-90} = \frac{28}{30} = \frac{14}{15}$

$$81I_1 + 27I_2 = 126$$
$$-9I_1 + 27I_2 = 42 \quad -$$
$$90I_1 = 84$$
$$I_1 = \frac{14}{15}$$

$$I_3 = I_1 + I_2 = \frac{14}{15} + \frac{14}{15}$$

$$= \frac{28}{15} A$$

Jadi daya nya :

$$P = I_3 \cdot 2 \cdot R_3 \Rightarrow \frac{28}{15} \cdot 2 \cdot \frac{5}{3} = 280 \text{ watt}$$